Algebra II
Lesson #3 Unit 11
Class Worksheet #3
For Worksheets #4 - #6

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1. $8^{(3x + 1)} = 16$

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4. $2^{(3x + 2)} = e^{(x + 1)}$

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Use the common base method to solve each of the equations.

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2. $125^{(2x - 1)} = 25^{(x + 1)}$

$[5^3]^{(2x - 1)} = [5^2]^{(x + 1)}$

$5^{(6x - 3)} = 5^{(2x + 2)}$

$6x - 3 = 2x + 2$

$4x = 5$

Each side of the equation can be expressed as a power of 5.

Use the properties of exponents to express the equation in the form $B^g = B^h$.

The exponents are equal. Solve the equation $g = h$.

Algebra II Class Worksheet #3 Unit 11

Use the common base method to solve each of the equations.

1. $8^{(3x+1)} = 16$

$[2^3]^{(3x+1)} = 2^4$

$2^{(9x+3)} = 2^4$

$9x + 3 = 4$

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Use logarithms to solve each of the equations. Express your answers rounded to the nearest hundredth.

3. $5^{(2x-3)} = 3$

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Add 3log 5 to each side of the equation.

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Divide each side by 2log 5.

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$3x\log 2 + 2\log 2 = x\log e + \log e$

$3x\log 2 - x\log e = \log e - 2\log 2$

$(3\log 2 - \log e)x =$

Take the log of both sides of the equation.

Apply the 'power rule' of logarithms.

Factor out the x from this expression.

Algebra II Class Worksheet #3 Unit 11

Use logarithms to solve each of the equations. Express your answers rounded to the nearest hundredth.

3. $5^{(2x-3)} = 3$

$\log[5^{(2x-3)}] = \log 3$

$(2x-3)(\log 5) = \log 3$

$2x\log 5 - 3\log 5 = \log 3$

$2x\log 5 = \log 3 + 3\log 5$

$$x = \frac{\log 3 + 3\log 5}{2\log 5} \approx 1.84$$

4. $2^{(3x+2)} = e^{(x+1)}$

$\log[2^{(3x+2)}] = \log[e^{(x+1)}]$

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$(3\log 2 - \log e)x = \log e - 2\log 2$

Take the log of both sides of the equation.

Apply the 'power rule' of logarithms.

Divide each side by 3log 2 – log e.

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$$x = \frac{\log e - 2\log 2}{}$$

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Algebra II Class Worksheet #3 Unit 11

Use logarithms to solve each of the equations. Express your answers rounded to the nearest hundredth.

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$(3\log 2 - \log e)x = \log e - 2\log 2$

$$x = \frac{\log e - 2\log 2}{3\log 2 - \log e} \approx -0.36$$

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Common logarithms were used when solving these problems.

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Use logarithms to solve each of the equations. Express your answers rounded to the nearest hundredth.

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$$x = \frac{\log e - 2\log 2}{3\log 2 - \log e} \approx -0.36$$

Common logarithms were used when solving these problems. Natural logarithms would have worked as well.

Algebra II Class Worksheet #3 Unit 11

Use logarithms to solve each of the equations. Express your answers rounded to the nearest hundredth.

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$2x\log 5 - 3\log 5 = \log 3$

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$$x = \frac{\log 3 + 3\log 5}{2\log 5} \approx 1.84$$

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$(3\log 2 - \log e)x = \log e - 2\log 2$

$$x = \frac{\log e - 2\log 2}{3\log 2 - \log e} \approx -0.36$$

Common logarithms were used when solving these problems. Natural logarithms would have worked as well. What follows are these two problem done using natural logarithms for comparison.

Algebra II Class Worksheet #3 Unit 11

Use logarithms to solve each of the equations. Express your answers rounded to the nearest hundredth.

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$(2x-3)(\log 5) = \log 3$

$2x\log 5 - 3\log 5 = \log 3$

$2x\log 5 = \log 3 + 3\log 5$

$$x = \frac{\log 3 + 3\log 5}{2\log 5} \approx 1.84$$

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$(2x-3)(\ln 5) = \ln 3$

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$$x = \frac{\ln 3 + 3\ln 5}{2\ln 5} \approx 1.84$$

Algebra II Class Worksheet #3 Unit 11

Use logarithms to solve each of the equations. Express your answers rounded to the nearest hundredth.

4. $2^{(3x+2)} = e^{(x+1)}$

$\log[2^{(3x+2)}] = \log[e^{(x+1)}]$

$(3x+2)(\log 2) = (x+1)(\log e)$

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$3x\log 2 - x\log e = \log e - 2\log 2$

$(3\log 2 - \log e)x = \log e - 2\log 2$

$$x = \frac{\log e - 2\log 2}{3\log 2 - \log e} \approx -0.36$$

4. $2^{(3x+2)} = e^{(x+1)}$

$\ln[2^{(3x+2)}] = \ln[e^{(x+1)}]$

$(3x+2)(\ln 2) = (x+1)(\ln e)$

$3x\ln 2 + 2\ln 2 = x + 1$

$3x\ln 2 - x = 1 - 2\ln 2$

$(3\ln 2 - 1)x = 1 - 2\ln 2$

$$x = \frac{1 - 2\ln 2}{3\ln 2 - 1} \approx -0.36$$

Algebra II   Class Worksheet #3   Unit 11

Solve for x. Express irrational solutions rounded to the nearest hundredth.

5. $\log_2 x = 3$

6. $\log_2 x = -3$

7. $\log_4 x = 2.5$

8. $\log_4 x = -1.5$

9. $\log_3 x = 1.5$

10. $\log x = 0.8$

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$$\log_B x = k \longrightarrow x = B^k$$

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Solve for x. Express irrational solutions rounded to the nearest hundredth.

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   $x = 1/(\sqrt{4})^3 = 1/2^3$

   $\boxed{x = 1/8}$

9. $\text{Log}_3 x = 1.5$

   $\boxed{x = 3^{1.5} \approx 5.20}$

10. $\text{Log}\ x = 0.8$

    $x = 10^{0.8} \approx 6.31$

$$\log_B x = k \longrightarrow x = B^k$$

Algebra II Class Worksheet #3 Unit 11

Solve for x. Express irrational solutions rounded to the nearest hundredth.

5. $\text{Log}_2 x = 3$

   $x = 2^3$

   $\boxed{x = 8}$

6. $\text{Log}_2 x = -3$

   $x = 2^{-3} = 1/2^3$

   $\boxed{x = 1/8}$

7. $\text{Log}_4 x = 2.5$

   $x = 4^{2.5} = 4^{(5/2)}$

   $x = (\sqrt{4}\,)^5 = 2^5$

   $\boxed{x = 32}$

8. $\text{Log}_4 x = -1.5$

   $x = 4^{-1.5} = 4^{(-3/2)} = 1/4^{(3/2)}$

   $x = 1/(\sqrt{4}\,)^3 = 1/2^3$

   $\boxed{x = 1/8}$

9. $\text{Log}_3 x = 1.5$

   $\boxed{x = 3^{1.5} \approx 5.20}$

10. $\text{Log}\, x = 0.8$

    $\boxed{x = 10^{0.8} \approx 6.31}$

$$\log_B x = k \longrightarrow x = B^k$$

Algebra II Class Worksheet #3 Unit 11

Solve for x. Express irrational solutions rounded to the nearest hundredth.

5. $\text{Log}_2 x = 3$

   $x = 2^3$

   $\boxed{x = 8}$

6. $\text{Log}_2 x = -3$

   $x = 2^{-3} = 1/2^3$

   $\boxed{x = 1/8}$

7. $\text{Log}_4 x = 2.5$

   $x = 4^{2.5} = 4^{(5/2)}$

   $x = (\sqrt{4})^5 = 2^5$

   $\boxed{x = 32}$

8. $\text{Log}_4 x = -1.5$

   $x = 4^{-1.5} = 4^{(-3/2)} = 1/4^{(3/2)}$

   $x = 1/(\sqrt{4})^3 = 1/2^3$

   $\boxed{x = 1/8}$

9. $\text{Log}_3 x = 1.5$

   $\boxed{x = 3^{1.5} \approx 5.20}$

10. $\text{Log}\, x = 0.8$

    $\boxed{x = 10^{0.8} \approx 6.31}$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\log_5 8 =$

12. $\log_5 3 =$

13. $\log_2 7 =$

14. $\log_8 200 =$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 =$

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 =$

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

We will begin by deriving the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\log_5 8 =$

12. $\log_5 3 =$

13. $\log_2 7 =$

14. $\log_8 200 =$

We will begin by deriving the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 =$

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

We will begin by deriving the change of base formula.

Suppose $\text{Log}_5 8 = A$.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

We will begin by deriving the change of base formula.

Suppose $\text{Log}_5 8 = A$.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

We will begin by deriving the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

We will begin by deriving the change of base formula.

Using the definition of logs,

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

We will begin by deriving the change of base formula.

Using the definition of logs, this implies that $5^A = 8$.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\log_5 8 = A$

$5^A = 8$

We will begin by deriving the change of base formula.

Using the definition of logs, this implies that $5^A = 8$.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\log_5 8 = A$

$5^A = 8$

We will begin by deriving the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$5^A = 8$

We will begin by deriving the change of base formula.

Next, we will take the Log_B of both sides of the equation.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\mathrm{Log}_5 8 = A$

$5^A = 8$

$\mathrm{Log}_B(5^A)$

We will begin by deriving the change of base formula.

Next, we will take the Log_B of both sides of the equation.

Algebra II   Class Worksheet #3   Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$5^A = 8$

$\text{Log}_B(5^A) =$

We will begin by deriving the change of base formula.

Next, we will take the Log_B of both sides of the equation.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

We will begin by deriving the change of base formula.

Next, we will take the Log_B of both sides of the equation.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

We will begin by deriving the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$5^A = 8$

$\text{Log}_B(5^A) = \text{Log}_B 8$

We will begin by deriving the change of base formula.

Next, we will apply the power rule on the left side of the equation.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\mathrm{Log}_5 8 = A$

$5^A = 8$

$\mathrm{Log}_B(5^A) = \mathrm{Log}_B 8$

$A\mathrm{Log}_B 5$

We will begin by deriving the change of base formula.

Next, we will apply the power rule on the left side of the equation.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

$$A\text{Log}_B 5 =$$

We will begin by deriving the change of base formula.

Next, we will apply the power rule on the left side of the equation.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

$$A\text{Log}_B 5 = \text{Log}_B 8$$

We will begin by deriving the change of base formula.

Next, we will apply the power rule on the left side of the equation.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

$$A\text{Log}_B 5 = \text{Log}_B 8$$

We will begin by deriving the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

$$A\text{Log}_B 5 = \text{Log}_B 8$$

We will begin by deriving the change of base formula.

Finally, we will divide each side of the equation by $\text{Log}_B 5$ to solve for A.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$5^A = 8$

$\text{Log}_B(5^A) = \text{Log}_B 8$

$A\text{Log}_B 5 = \text{Log}_B 8$

$A =$

We will begin by deriving the change of base formula.

Finally, we will divide each side of the equation by $\text{Log}_B 5$ to solve for A.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

$$A\text{Log}_B 5 = \text{Log}_B 8$$

$$A = \frac{\text{Log}_B 8}{\phantom{\text{Log}_B 5}}$$

We will begin by deriving the change of base formula.

Finally, we will divide each side of the equation by $\text{Log}_B 5$ to solve for A.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

$$A\text{Log}_B 5 = \text{Log}_B 8$$

$$A = \frac{\text{Log}_B 8}{\text{Log}_B 5}$$

We will begin by deriving the change of base formula.

Finally, we will divide each side of the equation by $\text{Log}_B 5$ to solve for A.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

$$A\text{Log}_B 5 = \text{Log}_B 8$$

$$A = \frac{\text{Log}_B 8}{\text{Log}_B 5}$$

We will begin by deriving the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

$$A\text{Log}_B 5 = \text{Log}_B 8$$

$$A = \boxed{\frac{\text{Log}_B 8}{\text{Log}_B 5}}$$

We will begin by deriving the change of base formula.

Now, we can substitute this expression for A in the original equation.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = A = \dfrac{\text{Log}_B 8}{\text{Log}_B 5}$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

$$A\text{Log}_B 5 = \text{Log}_B 8$$

$$A = \boxed{\dfrac{\text{Log}_B 8}{\text{Log}_B 5}}$$

We will begin by deriving the change of base formula.

Now, we can substitute this expression for A in the original equation.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\text{Log}_B 8}{\text{Log}_B 5}$

$$5^A = 8$$

$$\text{Log}_B(5^A) = \text{Log}_B 8$$

$$A\text{Log}_B 5 = \text{Log}_B 8$$

$$A = \boxed{\dfrac{\text{Log}_B 8}{\text{Log}_B 5}}$$

We will begin by deriving the change of base formula.

Now, we can substitute this expression for A in the original equation.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\text{Log}_B 8}{\text{Log}_B 5}$

We will begin by deriving the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\text{Log}_B 8}{\text{Log}_B 5}$

We will begin by deriving the change of base formula.

We have 'changed the base' from base 5 to base B.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\text{Log}_B 8}{\text{Log}_B 5}$

We will begin by deriving the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\text{Log}_B 8}{\text{Log}_B 5}$

We will begin by deriving the change of base formula.

Here is the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\text{Log}_B 8}{\text{Log}_B 5}$

The Change of Base Formula

We will begin by deriving the change of base formula.

Here is the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\text{Log}_B 8}{\text{Log}_B 5}$

The Change of Base Formula

$\log_K N =$

We will begin by deriving the change of base formula.

Here is the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\text{Log}_B 8}{\text{Log}_B 5}$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{}$$

We will begin by deriving the change of base formula.

Here is the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\text{Log}_B 8}{\text{Log}_B 5}$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

We will begin by deriving the change of base formula.

Here is the change of base formula.

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 =$

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 =$

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II   Class Worksheet #3   Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 =$

12. $\text{Log}_5 3 =$

We will change the base to base 10, the common logarithm.

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\mathrm{Log}_5 8 = \dfrac{\log 8}{}$

We will change the base to base 10, the common logarithm.

12. $\mathrm{Log}_5 3 =$

13. $\mathrm{Log}_2 7 =$

14. $\mathrm{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5}$

We will change the base to base 10, the common logarithm.

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\log_5 8 = \dfrac{\log 8}{\log 5} \approx$

We will change the base to base 10, the common logarithm.

12. $\log_5 3 =$

13. $\log_2 7 =$

14. $\log_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

We will change the base to base 10, the common logarithm.

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

We could have changed the base to base e, the natural logarithm.

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

    $\text{Log}_5 8 =$

    We could have changed the base to base e, the natural logarithm.

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

$\text{Log}_5 8 = \dfrac{\ln 8}{}$

We could have changed the base to base e, the natural logarithm.

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

$\text{Log}_5 8 = \dfrac{\ln 8}{\ln 5}$

We could have changed the base to base e, the natural logarithm.

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

$\text{Log}_5 8 = \dfrac{\ln 8}{\ln 5} \approx$

We could have changed the base to base e, the natural logarithm.

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

    $\text{Log}_5 8 = \dfrac{\ln 8}{\ln 5} \approx 1.29$

    We could have changed the base to base e, the natural logarithm.

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\log_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

    $\log_5 8 = \dfrac{\ln 8}{\ln 5} \approx 1.29$

12. $\log_5 3 =$

13. $\log_2 7 =$

14. $\log_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

    $\text{Log}_5 8 = \dfrac{\ln 8}{\ln 5} \approx 1.29$

    The results are exactly equal to each other, as expected.

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

12. $\text{Log}_5 3 =$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

12. $\text{Log}_5 3 =$

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The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

12. $\text{Log}_5 3 = \dfrac{\log 3}{}$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

12. $\text{Log}_5 3 = \dfrac{\log 3}{\log 5}$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

12. $\text{Log}_5 3 = \dfrac{\log 3}{\log 5} \approx$

13. $\text{Log}_2 7 =$

14. $\text{Log}_8 200 =$

The Change of Base Formula

$$\log_K N = \frac{\log_B N}{\log_B K}$$

Algebra II Class Worksheet #3 Unit 11

Use the change of base formula to evaluate each of the following logarithms. Express your answers rounded to the nearest hundredth.

11. $\text{Log}_5 8 = \dfrac{\log 8}{\log 5} \approx 1.29$

12. $\text{Log}_5 3 = \dfrac{\log 3}{\log 5} \approx 0.68$

13. $\text{Log}_2 7 =$

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Algebra II Class Worksheet #3 Unit 11

Solve the following problems. Express your answers rounded to the nearest tenth of a year.

15. \$500 is invested in an account that pays interest at an annual rate of 3% compounded monthly. How long will it take for the value of the account to reach \$600?

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Write the compound interest formula.

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Solve the following problems. Express your answers rounded to the nearest tenth of a year.

15. $500 is invested in an account that pays interest at an annual rate of 3% compounded monthly. How long will it take for the value of the account to reach $600?

$$A = P(1 + R/N)^{NT}$$

Write the compound interest formula.

Algebra II Class Worksheet #3 Unit 11

Solve the following problems. Express your answers rounded to the nearest tenth of a year.

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$$P = 500$$

$$R = 0.03$$

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$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

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$P = 500$

$R = 0.03$

$N = 12$

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$P = 500$

$R = 0.03$

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$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

Solve for T.

Algebra II Class Worksheet #3 Unit 11

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$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

Solve for T.

Divide both sides by 500, and simplify this expression.

Algebra II Class Worksheet #3 Unit 11

Solve the following problems. Express your answers rounded to the nearest tenth of a year.

15. \$500 is invested in an account that pays interest at an annual rate of 3% compounded monthly. How long will it take for the value of the account to reach \$600?

$$A = P(1 + R/N)^{NT} \Rightarrow 600 = 500(1 + 0.03/12)^{12T}$$

$$1.2$$

$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

Solve for T.

Divide both sides by 500, and simplify this expression.

Algebra II Class Worksheet #3 Unit 11

Solve the following problems. Express your answers rounded to the nearest tenth of a year.

15. \$500 is invested in an account that pays interest at an annual rate of 3% compounded monthly. How long will it take for the value of the account to reach \$600?

$A = P(1 + R/N)^{NT}$ ➡ $600 = 500(1 + 0.03/12)^{12T}$

$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

$1.2 =$

Solve for T.

Divide both sides by 500, and simplify this expression.

Algebra II Class Worksheet #3 Unit 11

Solve the following problems. Express your answers rounded to the nearest tenth of a year.

15. \$500 is invested in an account that pays interest at an annual rate of 3% compounded monthly. How long will it take for the value of the account to reach \$600?

$$A = P(1 + R/N)^{NT}$$

$$600 = 500(1 + 0.03/12)^{12T}$$

$$1.2 = 1.0025$$

$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

Solve for T.

Divide both sides by 500, and simplify this expression.

Algebra II Class Worksheet #3 Unit 11

Solve the following problems. Express your answers rounded to the nearest tenth of a year.

15. \$500 is invested in an account that pays interest at an annual rate of 3% compounded monthly. How long will it take for the value of the account to reach \$600?

$$A = P(1 + R/N)^{NT} \Rightarrow 600 = 500(1 + 0.03/12)^{12T}$$

$$1.2 = 1.0025^{12T}$$

$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

Solve for T.

Divide both sides by 500, and simplify this expression.

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$$1.2 = 1.0025^{12T}$$

$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

Solve for T.

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$$1.2 = 1.0025^{12T}$$

$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

Solve for T.

Reorder the equation, and 'take the Log of each side'.

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Solve the following problems. Express your answers rounded to the nearest tenth of a year.

15. \$500 is invested in an account that pays interest at an annual rate of 3% compounded monthly. How long will it take for the value of the account to reach \$600?

$A = P(1 + R/N)^{NT}$ → $600 = 500(1 + 0.03/12)^{12T}$

$1.2 = 1.0025^{12T}$

$\text{Log}(1.0025^{12T})$

$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

Solve for T.

Reorder the equation, and 'take the Log of each side'.

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$A = P(1 + R/N)^{NT}$ → $600 = 500(1 + 0.03/12)^{12T}$

$1.2 = 1.0025^{12T}$

$A = 600$

$P = 500$

$\text{Log}(1.0025^{12T}) =$

$R = 0.03$

$N = 12$

Solve for T.

Reorder the equation, and 'take the Log of each side'.

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$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

$$1.2 = 1.0025^{12T}$$

$$\text{Log}(1.0025^{12T}) = \text{Log } 1.2$$

Solve for T.

Reorder the equation, and 'take the Log of each side'.

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$1.2 = 1.0025^{12T}$

$A = 600$

$\text{Log}(1.0025^{12T}) = \text{Log } 1.2$

$P = 500$

$R = 0.03$

$N = 12$

Solve for T.

Apply the 'power rule' on the left side of the equation.

Algebra II Class Worksheet #3 Unit 11

Solve the following problems. Express your answers rounded to the nearest tenth of a year.

15. $500 is invested in an account that pays interest at an annual rate of 3% compounded monthly. How long will it take for the value of the account to reach $600?

$A = P(1 + R/N)^{NT}$ ⇒ $600 = 500(1 + 0.03/12)^{12T}$

$A = 600$

$P = 500$

$R = 0.03$

$N = 12$

$1.2 = 1.0025^{12T}$

$\text{Log}(1.0025^{12T}) = \text{Log } 1.2$

$12T$

Solve for T.

Apply the 'power rule' on the left side of the equation.

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Algebra II   Class Worksheet #3   Unit 11

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Divide each side by 12Log1.0025.

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Divide each side by 12Log1.0025. Approximate the result.

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$$T = \frac{\text{Log } 1.2}{12\text{Log } 1.0025} \approx 6.1$$

Solve for T.

Divide each side by 12Log1.0025. Approximate the result.

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Solve for T.

Answer the question.

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It will take about 6.1 years.

Solve for T.
Answer the question.

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Write the continuously compounded interest formula.

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Solve the following problems. Express your answers rounded to the nearest tenth of a year.

16. Money is invested in an account that pays interest at an annual rate of 5% compounded continuously. How long will it take for the value of the account to double?

$$A = Pe^{RT}$$

Write the continuously compounded interest formula.

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Use the given information to substitute into the equation.

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$$A = Pe^{RT}$$

$$A = 2P$$

$$R =$$

Write the continuously compounded interest formula.
Use the given information to substitute into the equation.

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Solve the following problems. Express your answers rounded to the nearest tenth of a year.

16. Money is invested in an account that pays interest at an annual rate of 5% compounded continuously. How long will it take for the value of the account to double?

$$A = Pe^{RT}$$

$$A = 2P$$

$$R = 0.05$$

Write the continuously compounded interest formula.
Use the given information to substitute into the equation.

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$A = Pe^{RT}$ $\Rightarrow$ $2P = Pe^{0.05T}$

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Solve for T.
Reorder the equation, and divide each side by P.

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$e^{0.05T} =$

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Solve for T.
'Take the natural log' of each side.

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$\ln(e^{0.05T})$

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$A = 2P$ $\qquad e^{0.05T} = 2$

$R = 0.05$ $\qquad \ln(e^{0.05T}) = \ln 2$

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$0.05T \ln e$

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16. Money is invested in an account that pays interest at an annual rate of 5% compounded continuously. How long will it take for the value of the account to double?

$A = Pe^{RT}$ $\Rightarrow$ $2P = Pe^{0.05T}$

$A = 2P$

$R = 0.05$

$$e^{0.05T} = 2$$

$$\ln(e^{0.05T}) = \ln 2$$

$$0.05T \ln e = \ln 2$$

Solve for T.

Apply the 'power rule' on the left side of the equation.

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Divide each side by 0.05.

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Divide each side by 0.05. ($\ln e = 1$)

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$$T = \frac{\ln 2}{0.05}$$

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Divide each side by 0.05. ($\ln e = 1$) Approximate the result.

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$$T = \frac{\ln 2}{0.05} \approx 13.9$$

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Answer the question.

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It will take about 13.9 years.

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