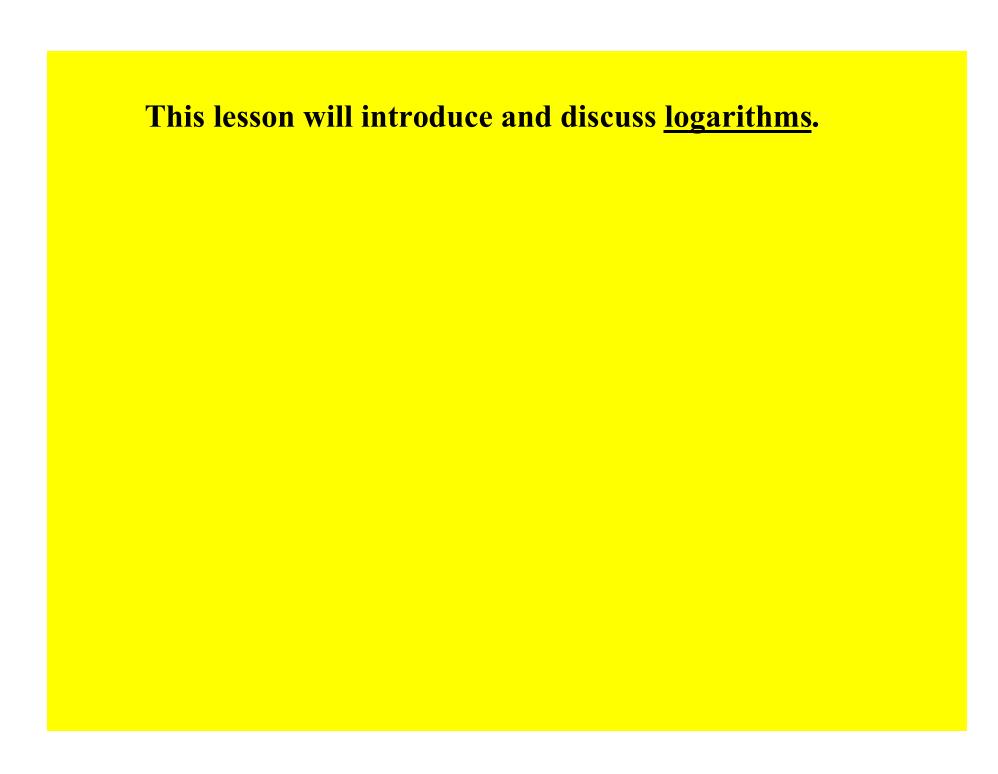
Algebra II Lesson #1 Unit 11 Class Worksheet #1 For Worksheet #1



This lesson will introduce and discuss <u>logarithms</u>.

Here is a definition.

Here is a definition.

$$\log_B N = k$$
 if and only if $N = B^k$.

Here is a definition.

$$\log_B N = k$$
 if and only if $N = B^k$.

Here is a definition.

 $\log_B N = k$ if and only if $N = B^k$.

How is this notation read?

Here is a definition.

 $\log_B N = k$ if and only if $N = B^k$.

How is this notation read?

the logarithm of N base B

Here is a definition.

 $\log_B N = k$ if and only if $N = B^k$.

How is this notation read?

the logarithm of N base B

or (more commonly)

Here is a definition.

 $\log_B N = k$ if and only if $N = B^k$.

How is this notation read?

the logarithm of N base B

or (more commonly)

the log of N base B

Here is a definition.

$$\log_B N = k$$
 if and only if $N = B^k$.

Here is a definition.

 $\log_B N = k$ if and only if $N = B^k$.

This definition relates two types of equations.

Here is a definition.

$$log_B N = k$$
 if and only if $N = B^k$.

This definition relates two types of equations.

a logarithmic equation

Here is a definition.

$$\log_B N = k$$
 if and only if $N = B^k$.

This definition relates two types of equations.

a logarithmic equation and an exponential equation

Here is a definition.

$$\frac{1}{\log_B N = k} \text{ if and only if } N = B^k.$$

This definition relates two types of equations.

a logarithmic equation and an exponential equation

Understand that the 'answer' in the logarithmic equation

Here is a definition.

$$\log_{B} N = k \text{ if and only if } N = B^{k}.$$

This definition relates two types of equations.

a logarithmic equation and an exponential equation

Understand that the 'answer' in the logarithmic equation is the exponent in the exponential equation.

Here is a definition.

$$\log_B N = k$$
 if and only if $N = B^k$.

This definition relates two types of equations.

a logarithmic equation and an exponential equation

Understand that the 'answer' in the logarithmic equation is the exponent in the exponential equation.

Here is a definition.

$$\log_B N = k$$
 if and only if $N = B^k$.

This definition relates two types of equations.

a logarithmic equation and an exponential equation

Understand that the 'answer' in the logarithmic equation is the exponent in the exponential equation.

The number B, in both equations, is called the base.

1.
$$\text{Log }_3 9 = 2$$

2.
$$\text{Log}_{5} 125 = 3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

4.
$$\text{Log }_2 0.25 = -2$$

1.
$$\text{Log }_3 9 = 2$$

2.
$$\log_{5} 125 = 3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

4.
$$\text{Log}_2 0.25 = -2$$

1.
$$\text{Log }_3 9 = 2$$

2.
$$\log_{5} 125 = 3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

4.
$$\text{Log}_2 0.25 = -2$$

1.
$$\text{Log }_3 9 = 2$$

2.
$$\text{Log}_{5} 125 = 3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

Write the exponential equation that corresponds to each logarithmic equation.

1.
$$\text{Log }_3 9 = 2$$

9

2.
$$\text{Log}_{5} 125 = 3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

4.
$$\log_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^1$$

1.
$$\text{Log }_3 9 = 2$$

3.
$$\text{Log }_{9} 3 = 0.5$$

2.
$$\text{Log}_{5} 125 = 3$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log}_{3} 9 = 2$$

$$9 = 3^2$$

3.
$$\text{Log }_{9} 3 = 0.5$$

2.
$$Log_5 125 = 3$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^1$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

3.
$$\log_{9} 3 = 0.5$$

2.
$$Log_5 125 = 3$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^1$$

1.
$$\text{Log}_{3} 9 = 2$$

$$9 = 3^2$$

3.
$$\text{Log }_{9} 3 = 0.5$$

2.
$$Log_5 125 = 3$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log}_{3} 9 = 2$$

$$9 = 3^2$$

2.
$$Log_5 125 = 3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^1$$

1.
$$\text{Log}_{3} 9 = 2$$

$$9 = 3^2$$

3.
$$\log_{9} 3 = 0.5$$

2.
$$\text{Log}_{5} 125 = 3$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^1$$

1.
$$\text{Log}_{3} 9 = 2$$

$$9 = 3^2$$

3.
$$\log_{9} 3 = 0.5$$

2.
$$Log_5 125 = 3$$

$$125 = 5^3$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^1$$

1.
$$\text{Log}_{3} 9 = 2$$

$$9 = 3^2$$

3.
$$\text{Log }_{9} 3 = 0.5$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^1$$

1.
$$\text{Log}_{3} 9 = 2$$

$$9 = 3^2$$

2.
$$Log_5 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\text{Log}_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^{k}$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\text{Log}_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\text{Log}_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\text{Log}_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\text{Log}_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3 = \sqrt{9}$$
$$3 = 9^{0.5}$$

$$3 = 9^{0.5}$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\text{Log}_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\log_2 0.25 = -2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\log_2 0.25 = -2$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\log_2 0.25 = -2$$

$$0.25 =$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\log_2 0.25 = -2$$

$$0.25 = 1/4$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\text{Log }_2 0.25 = -2$$

$$0.25 = 1/4 =$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\text{Log }_2 0.25 = -2$$

$$0.25 = 1/4 = 1/2^2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\log_2 0.25 = -2$$

$$0.25 = 1/4 = 1/2^2$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\log_2 0.25 = -2$$

$$0.25 = 1/4 = 1/2^2$$

$$0.25 =$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^{k}$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\log_2 0.25 = -2$$

$$0.25 = 1/4 = 1/2^2$$

$$0.25 = 2^{-2}$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^{k}$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\log_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\text{Log }_2 0.25 = -2$$

$$0.25 = 1/4 = 1/2^2$$

$$0.25 = 2^{-2}$$

$$\log_{B} N = k \qquad \longrightarrow \qquad N = B^{k}$$



$$N = B^k$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\text{Log}_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\text{Log}_2 0.25 = -2$$

$$0.25 = 1/4 = 1/2^2$$

$$0.25 = 2^{-2}$$

1.
$$\text{Log }_3 9 = 2$$

$$9 = 3^2$$

2.
$$\text{Log }_{5} 125 = 3$$

$$125 = 5^3$$

3.
$$\text{Log }_{9} 3 = 0.5$$

$$3=\sqrt{9}$$

$$3 = 9^{0.5}$$

4.
$$\text{Log }_2 0.25 = -2$$

$$0.25 = 1/4 = 1/2^2$$

$$0.25 = 2^{-2}$$

5.
$$3^4 = 81$$

6.
$$2^5 = 32$$

7.
$$16^{1.5} = 64$$

8.
$$9^{(-1/2)} = 1/3$$

5.
$$3^4 = 81$$

6.
$$2^5 = 32$$

7.
$$16^{1.5} = 64$$

8.
$$9^{(-1/2)} = 1/3$$

5.
$$3^4 = 81$$

6.
$$2^5 = 32$$

7.
$$16^{1.5} = 64$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

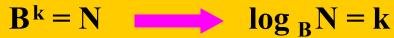
5.
$$3^4 = 81$$

6.
$$2^5 = 32$$

7.
$$16^{1.5} = 64$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$



5.
$$3^4 = 81$$

6.
$$2^5 = 32$$

7.
$$16^{1.5} = 64$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$



5.
$$3^4 = 81$$

$$Log_{3}81 =$$

7.
$$16^{1.5} = 64$$

6.
$$2^5 = 32$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

6.
$$2^5 = 32$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

6.
$$2^5 = 32$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

6.
$$2^5 = 32$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

6.
$$2^5 = 32$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

6.
$$2^5 = 32$$

$$Log_{2} 32 =$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

$$\log_{B} N = k$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

7.
$$16^{1.5} = 64$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

7.
$$16^{1.5} = 64$$

$$Log_{16} 64 =$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$



$$\log_{B} N = k$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

$$Log_{16} 64 = 1.5$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

$$\log_{B} N = k$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

7.
$$16^{1.5} = 64$$

$$Log_{16} 64 = 1.5$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$



$$\log_{B} N = k$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

$$Log_{16} 64 = 1.5$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

$$\log_{B} N = k$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

$$Log_{16} 64 = 1.5$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$Log_{9}(1/3)$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

$$\log_{B} N = k$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

$$Log_{16} 64 = 1.5$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$Log_{9}(1/3) =$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

$$\log_{B} N = k$$

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

$$Log_{16} 64 = 1.5$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$Log_{9}(1/3) = -1/2$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

$$\log_{B} N = k$$

Write the logarithmic equation that corresponds to each exponential equation.

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

$$Log_{16} 64 = 1.5$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$\text{Log }_{9}(1/3) = -1/2$$

$$\mathbf{B}^{\mathbf{k}} = \mathbf{N}$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

Write the logarithmic equation that corresponds to each exponential equation.

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

$$Log_{16} 64 = 1.5$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$Log_{9}(1/3) = -1/2$$

Write the logarithmic equation that corresponds to each exponential equation.

5.
$$3^4 = 81$$

$$Log_3 81 = 4$$

7.
$$16^{1.5} = 64$$

$$Log_{16} 64 = 1.5$$

6.
$$2^5 = 32$$

$$Log_{2} 32 = 5$$

8.
$$9^{(-1/2)} = 1/3$$

$$Log_{9}(1/3) = -1/2$$

9.
$$Log_5 25 =$$

10.
$$Log_{10} 1000 =$$

11.
$$Log_2 0.125 =$$

12.
$$Log_{10} 0.01 =$$

9.
$$Log_5 25 =$$

10.
$$Log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

9.
$$Log_5 25 =$$

10.
$$Log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

9.
$$Log_5 25 =$$

10.
$$Log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

12.
$$\text{Log}_{10} 0.01 =$$

$$N = B^k$$

10.
$$Log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

9.
$$Log_5 25 =$$

10.
$$Log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

9.
$$Log_5 25 =$$

$$25 = 5^2$$

10.
$$Log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

9.
$$Log_5 25 = 2$$

$$25 = 5^2$$

10.
$$Log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

9.
$$Log_5 25 = 2$$

$$25 = 5^2$$

10.
$$Log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$Log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 =$$

11.
$$\text{Log}_2 0.125 = \underline{\hspace{1cm}}$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k$$
 $\log_B N = k$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 =$$

$$1000 = 10^3$$

11.
$$\text{Log}_2 0.125 = \underline{\hspace{1cm}}$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k$$
 $\log_B N = k$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$

 $1000 = 10^3$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k$$
 $\log_B N = k$

$$\log_B N = k$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$

 $1000 = 10^3$

11.
$$\text{Log}_2 0.125 =$$

11.
$$\text{Log}_2 0.125 =$$
 12. $\text{Log}_{10} 0.01 =$

$$N = B^k$$
 $\log_B N = k$

$$\log_B N = k$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$Log_2 0.125 =$$

12.
$$Log_{10} 0.01 =$$

$$N = B^k$$

$$N = B^k$$
 $\log_B N = k$

Evaluate each of the following logarithms.

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$Log_2 0.125 =$$

0.125

12.
$$Log_{10} 0.01 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

9.
$$Log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$Log_2 0.125 =$$

$$0.125 =$$

12.
$$Log_{10} 0.01 =$$

$$N = B_{k}$$



9.
$$Log_5 25 = 2$$

 $25 = 5^2$

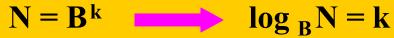
10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$Log_2 0.125 =$$

$$0.125 = 1/8$$

12.
$$Log_{10} 0.01 =$$

$$N = B^k$$



9.
$$Log_5 25 = 2$$

 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$Log_2 0.125 =$$

$$0.125 = 1/8 =$$

12.
$$Log_{10} 0.01 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

9.
$$Log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$Log_2 0.125 =$$

$$0.125 = 1/8 = 1/2^3$$

12.
$$Log_{10} 0.01 =$$

$$N = B^k$$

$$N = B^k$$
 $\log_B N = k$

9.
$$Log_5 25 = 2$$

 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\log_2 0.125 =$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125$$

12.
$$Log_{10} 0.01 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

9.
$$Log_5 25 = 2$$

 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = \underline{}$$

12.
$$Log_{10} 0.01 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

9.
$$Log_5 25 = 2$$

 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

12.
$$Log_{10} 0.01 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

9.
$$Log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 0.125 = \underline{-3}$$

 $0.125 = 1/8 = 1/2^3$
 $0.125 = 2^{-3}$

12.
$$Log_{10} 0.01 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{\hspace{0.5cm}} -3$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$Log_{10} 0.01 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{\hspace{0.5cm}} -3$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$Log_{10} 0.01 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$\log_{10} 0.01 =$$

$$N = B^k$$
 $\log_B N = k$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$\log_{10} 0.01 =$$

$$N = B^k \qquad \qquad \log_B N = k$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$\log_{10} 0.01 =$$

0.01 = 1/100

$$N = B^k$$
 $\log_B N = k$

9.
$$Log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$\log_{10} 0.01 =$$

0.01 = 1/100 =

$$N = B^k \qquad \qquad \log_B N = k$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

$$N = B^k$$
 $\log_B N = k$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$\log_{10} 0.01 = \underline{\hspace{1cm}}$$
 $0.01 = 1/100 = 1/10^2$
 0.01

$$N = B^k$$
 $\log_B N = k$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\log_2 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$\log_{10} 0.01 = \underline{}$$
 $0.01 = 1/100 = 1/10^2$
 $0.01 = \underline{}$

$$N = B^k$$
 $\log_B N = k$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\log_2 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$\log_{10} 0.01 =$$

 $0.01 = 1/100 = 1/10^2$
 $0.01 = 10^{-2}$

$$N = B^k$$
 $\log_B N = k$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\log_2 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$\log_{10} 0.01 = \underline{-2}$$
 $0.01 = 1/100 = 1/10^2$
 $0.01 = 10^{-2}$

$$N = B^k$$
 $\log_B N = k$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$\log_{10} 0.01 = \underline{-2}$$
 $0.01 = 1/100 = 1/10^2$
 $0.01 = 10^{-2}$

$$N = B^k$$
 $\log_B N = k$

9.
$$Log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$
 $1000 = 10^3$

11.
$$\text{Log}_2 \ 0.125 = \underline{\hspace{0.2cm}} -3$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

11.
$$\text{Log}_2 \ 0.125 = \underline{\hspace{0.3cm}} -3$$

$$0.125 = 1/8 = 1/2^3$$

$$0.01 = 1/100 = 1/10^2$$

$$0.125 = 2^{-3}$$

$$0.01 = 10^{-2}$$

9.
$$\log_5 25 = 2$$
 $25 = 5^2$

10.
$$\log_{10} 1000 = 3$$

 $1000 = 10^3$

11.
$$\log_2 0.125 = \underline{-3}$$

$$0.125 = 1/8 = 1/2^3$$

$$0.125 = 2^{-3}$$

12.
$$\log_{10} 0.01 = \underline{-2}$$
 $0.01 = 1/100 = 1/10^2$
 $0.01 = 10^{-2}$

13.
$$\text{Log}_2 1/32 = \underline{\hspace{1cm}}$$

14.
$$\text{Log}_9 3 =$$

15.
$$Log_{25} 125 =$$

16.
$$Log_3 243 =$$

13.
$$\text{Log}_2 1/32 =$$

14.
$$Log_9 3 =$$

15.
$$Log_{25}$$
 125 = ____

16.
$$Log_3 243 =$$

13.
$$\text{Log}_2 1/32 =$$

14.
$$Log_9 3 =$$

15.
$$Log_{25} 125 =$$

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\text{Log}_2 1/32 = \underline{\hspace{1cm}}$$

14.
$$\text{Log}_9 3 =$$

15.
$$Log_{25} 125 =$$
 16. $Log_3 243 =$

16.
$$\text{Log}_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$Log_2 1/32 =$$

14.
$$Log_9 3 =$$

15.
$$Log_{25} 125 =$$
 16. $Log_3 243 =$

16.
$$\text{Log}_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$Log_2 1/32 =$$

14.
$$Log_9 3 =$$

15.
$$Log_{25} 125 =$$
 16. $Log_3 243 =$

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\text{Log}_2 1/32 = \underline{\hspace{1cm}}$$

 $1/32 = 1/2^5$

14.
$$\text{Log}_9 3 =$$

15.
$$Log_{25} 125 =$$
 16. $Log_3 243 =$

16.
$$\text{Log}_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\log_2 1/32 = \underline{\hspace{1cm}}$$
 $1/32 = 1/2^5$
 $1/32$

14.
$$Log_9 3 =$$

15.
$$Log_{25} 125 =$$
 16. $Log_3 243 =$

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

14.
$$\text{Log}_9 3 =$$

15.
$$Log_{25} 125 =$$
 16. $Log_3 243 =$

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\log_2 1/32 = \underline{\hspace{1cm}}$$
 $1/32 = 1/2^5$
 $1/32 = 2^{-5}$

14.
$$\text{Log}_9 3 =$$

15.
$$Log_{25} 125 =$$
 16. $Log_3 243 =$

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\log_2 1/32 = \underline{-5}$$

 $1/32 = 1/2^5$
 $1/32 = 2^{-5}$

14.
$$Log_9 3 =$$

15.
$$Log_{25} 125 =$$
 16. $Log_3 243 =$

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\log_2 1/32 = -5$$

 $1/32 = 1/2^5$
 $1/32 = 2^{-5}$

14.
$$Log_9 3 =$$

15.
$$Log_{25}$$
 125 = ____

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\text{Log}_2 1/32 = \underline{-5}$$
 $1/32 = 1/2^5$
 $1/32 = 2^{-5}$

14.
$$\text{Log}_9 3 =$$

15.
$$Log_{25} 125 =$$

16.
$$\text{Log}_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\text{Log}_2 1/32 = \boxed{-5}$$
 $1/32 = 1/2^5$
 $1/32 = 2^{-5}$

14.
$$Log_9 3 =$$

15.
$$Log_{25} 125 =$$

16.
$$\text{Log}_3 243 = \underline{\hspace{1cm}}$$

$$N = B^k$$
 $\log_B N = k$

$$\log_{B} N = k$$

13.
$$\log_2 1/32 = -5$$
 $1/32 = 1/2^5$
 $1/32 = 2^{-5}$

14.
$$\text{Log}_9 3 = \underline{}$$

15.
$$Log_{25} 125 =$$

16.
$$\text{Log}_3 243 = \underline{\hspace{1cm}}$$

$$N = B^k$$

$$N = B^k$$
 $\log_B N = k$

13.
$$\log_2 1/32 = -5$$
 $1/32 = 1/2^5$
 $1/32 = 2^{-5}$

14.
$$\text{Log}_9 3 = \underline{}$$
 $3 = \sqrt{9}$

15.
$$Log_{25}$$
 125 = ____

16.
$$\text{Log}_3 243 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

13.
$$\text{Log}_2 1/32 = \boxed{-5}$$
 $1/32 = 1/2^5$
 $1/32 = 2^{-5}$

14.
$$\log_9 3 =$$

 $3 = \sqrt{9}$
3

15.
$$Log_{25}$$
 125 = ____

16.
$$Log_3 243 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

13.
$$\text{Log}_2 1/32 = \underline{-5}$$

$$1/32 = 1/2^5$$

$$1/32 = 2^{-5}$$

14.
$$\log_9 3 =$$

$$3 = \sqrt{9}$$

$$3 =$$

15.
$$Log_{25} 125 =$$

16.
$$Log_3 243 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

13.
$$\text{Log}_2 1/32 = \underline{-5}$$
 $1/32 = 1/2^5$
 $1/32 = 2^{-5}$

14.
$$\log_9 3 =$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$Log_{25}$$
 125 = ____

16.
$$Log_3 243 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_B N = k$$

13.
$$\text{Log}_2 1/32 = \boxed{-5}$$
 $1/32 = 1/2^5$
 $1/32 = 2^{-5}$

14.
$$\log_9 3 = 1/2$$

 $3 = \sqrt{9}$
 $3 = 9^{1/2}$

15.
$$Log_{25}$$
 125 = ____

16.
$$\text{Log}_3 243 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

13.
$$\text{Log}_2 1/32 = \underline{-5}$$

$$1/32 = 1/2^5$$

$$1/32 = 2^{-5}$$

14.
$$\log_9 3 = 1/2$$

 $3 = \sqrt{9}$
 $3 = 9^{1/2}$

15.
$$Log_{25}$$
 125 = ____

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$ $3 = \sqrt{9}$

$$1/32 = 2^{-5}$$

15.
$$Log_{25}$$
 125 = ____

14.
$$Log_9 3 = 1/2$$

$$3=\sqrt{9}$$

$$3 = 9^{1/2}$$

16.
$$\text{Log}_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$

$$1/32 = 1/2^5$$

$$3 = \sqrt{9}$$

$$1/32 = 2^{-5}$$

$$3 = 9^{1/2}$$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

16.
$$\text{Log}_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$

14. $\text{Log}_9 \ 3 = \underline{1/2}$
 $1/32 = 1/2^5$
 $3 = \sqrt{9}$
 $1/32 = 2^{-5}$
 $3 = 9^{1/2}$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

16.
$$\text{Log}_3 243 =$$

$$N = B^k$$

$$N = B^k \qquad \log_B N = k$$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$

$$1/32 = 1/2^5$$

$$3 = \sqrt{9}$$

$$1/32 = 2^{-5}$$

$$3 = 9^{1/2}$$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

16.
$$\text{Log}_3 243 =$$

$$N = B^k$$

$$N = B^k$$
 $\log_B N = k$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$

$$1/32 = 1/2^5$$

$$3 = \sqrt{9}$$

$$1/32 = 2^{-5}$$

$$3 = 9^{1/2}$$

14.
$$\text{Log}_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

16.
$$\text{Log}_3 243 =$$

$$N = B^k$$

$$N = B^k$$
 $\log_B N = k$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$

$$1/32 = 1/2^5$$

$$3 = \sqrt{9}$$

$$1/32 = 2^{-5}$$

$$3 = 9^{1/2}$$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k$$
 $\log_B N = k$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$

$$1/32 = 1/2^5$$

$$3 = \sqrt{9}$$

$$1/32 = 2^{-5}$$

$$3 = 9^{1/2}$$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k$$
 $\log_B N = k$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$

$$1/32 = 1/2^5$$

$$3 = \sqrt{9}$$

$$1/32 = 2^{-5}$$

$$3 = 9^{1/2}$$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$\log_{25} 125 =$$

$$125 = 5^3 = [25^{1/2}]^3$$

$$125 =$$

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k$$
 $\log_B N = k$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$

$$1/32 = 1/2^5$$

$$3 = \sqrt{9}$$

$$1/32 = 2^{-5}$$

$$3 = 9^{1/2}$$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$\log_{25} 125 = \underline{\hspace{1cm}}$$

$$125 = 5^3 = [25^{1/2}]^3$$

$$125 = 25^{3/2}$$

16.
$$Log_3 243 =$$

$$N = B^k$$

$$N = B^k$$
 $\log_B N = k$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$

$$1/32 = 1/2^5$$

$$3 = \sqrt{9}$$

$$1/32 = 2^{-5}$$

$$3 = 9^{1/2}$$

15.
$$Log_{25} 125 = 3/2$$

 $125 = 5^3 = [25^{1/2}]^3$
 $125 = 25^{3/2}$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

16.
$$\log_3 243 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$

$$1/32 = 1/2^5$$

$$3 = \sqrt{9}$$

$$1/32 = 2^{-5}$$

$$3 = 9^{1/2}$$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$\log_{25} 125 = 3/2$$

 $125 = 5^3 = [25^{1/2}]^3$
 $125 = 25^{3/2}$

16.
$$\log_3 243 =$$

$$N = B^k$$

$$N = B^k$$
 $\log_B N = k$

13.
$$\text{Log}_2 1/32 = \underline{-5}$$

$$1/32 = 1/2^5$$

$$1/32 = 2^{-5}$$

14.
$$\text{Log}_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$\log_{25} 125 = 3/2$$

 $125 = 5^3 = [25^{1/2}]^3$
 $125 = 25^{3/2}$

16.
$$Log_3 243 =$$

$$N = B^k \qquad \log_B N = k$$

$$\log_{\mathbf{R}} \mathbf{N} = \mathbf{k}$$

13.
$$\log_2 1/32 = -5$$

14. $\log_9 3 = 1/2$
 $1/32 = 1/2^5$
 $3 = \sqrt{9}$
 $1/32 = 2^{-5}$
 $3 = 9^{1/2}$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$\log_{25} 125 = 3/2$$

$$125 = 5^3 = [25^{1/2}]^3$$

$$125 = 25^{3/2}$$

16.
$$\log_3 243 =$$

$$N = B^k$$
 $\log_B N = k$

13.
$$\log_2 1/32 = -5$$

14. $\log_9 3 = 1/2$
 $1/32 = 1/2^5$
 $3 = \sqrt{9}$
 $1/32 = 2^{-5}$
 $3 = 9^{1/2}$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$\log_{25} 125 = 3/2$$

 $125 = 5^3 = [25^{1/2}]^3$
 $125 = 25^{3/2}$

$$N = B^k$$
 $\log_B N = k$

13.
$$\log_2 1/32 = -5$$

14. $\log_9 3 = 1/2$
 $1/32 = 1/2^5$
 $3 = \sqrt{9}$
 $1/32 = 2^{-5}$
 $3 = 9^{1/2}$

14.
$$\text{Log}_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$\log_{25} 125 = 3/2$$

$$125 = 5^3 = [25^{1/2}]^3$$

$$125 = 25^{3/2}$$

16.
$$\text{Log}_3 243 = \underline{}$$
 $243 = 3^5$

$$N = B^k$$
 $\log_B N = k$

13.
$$\log_2 1/32 = -5$$

14. $\log_9 3 = 1/2$
 $1/32 = 1/2^5$
 $3 = \sqrt{9}$
 $1/32 = 2^{-5}$
 $3 = 9^{1/2}$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$\log_{25} 125 = 3/2$$

$$125 = 5^3 = [25^{1/2}]^3$$

$$125 = 25^{3/2}$$

16.
$$Log_3 243 = 5$$

 $243 = 3^5$

$$N = B^k$$
 $\log_B N = k$

13.
$$\text{Log}_2 1/32 = \underline{-5}$$

$$1/32 = 1/2^5$$

$$1/32 = 2^{-5}$$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$\log_{25} 125 = 3/2$$

$$125 = 5^3 = [25^{1/2}]^3$$

$$125 = 25^{3/2}$$

16.
$$\log_3 243 = 5$$
 $243 = 3^5$

$$N = B^k$$
 $\log_B N = k$

13.
$$\text{Log}_2 \ 1/32 = \underline{-5}$$
 14. $\text{Log}_9 \ 3 = \underline{1/2}$

$$1/32 = 1/2^5$$

$$3 = \sqrt{9}$$

$$1/32 = 2^{-5}$$

$$3 = 9^{1/2}$$

14.
$$\log_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$Log_{25} 125 = 3/2$$

 $125 = 5^3 = [25^{1/2}]^3$
 $125 = 25^{3/2}$

16.
$$\log_3 243 = 5$$
 $243 = 3^5$

13.
$$\log_2 1/32 = \underline{-5}$$

$$1/32 = 1/2^5$$

$$1/32 = 2^{-5}$$

14.
$$\text{Log}_9 3 = 1/2$$

$$3 = \sqrt{9}$$

$$3 = 9^{1/2}$$

15.
$$\text{Log}_{25} 125 = 3/2$$

 $125 = 5^3 = [25^{1/2}]^3$
 $125 = 25^{3/2}$

16.
$$\log_3 243 = 5$$
 $243 = 35$