Calculus   Worksheet #2   Unit 8   page 1   _____

For each of the following functions, express dy in terms of x and dx.

1. $y = (3x - 2)^5$

2. $y = \sqrt{1 - 2x}$

3. $y = \sec(x^2 - 2)$

dy = _____

dy = _____

dy = _____

Use differentials to approximate each of the following. Show your work neatly organized.

4. $\sqrt{25.1}$

5. $\sqrt{99.6}$

6. $\sqrt[3]{62}$

7. $\sqrt[3]{128}$

Use differentials to answer each of the following questions. Show your work neatly organized.

8. Find the approximate change in sin x per 1 degree change in x for each of the following values of x. (hint: Let y = sin x and $\triangle x = \pi/180$)

a) $x = 0$

b) $x = \pi/6$

c) $x = \pi/3$

d) $x = \pi/2$

Use differentials to answer each of the following questions. Show your work neatly organized.

9. A brass sphere with a radius of 2 inches is given a silver plating which is .002 inches thick. What is the approximate volume of silver used? (For a sphere, $V = (4/3)\pi r^3$.)

10. A solid steel cube measuring x inches on each edge is to be plated with brass .01 inches thick. Use differentials to approximate (in terms of x) the volume of brass which is needed. What is the exact amount (again in terms of x)?