

Calculus Worksheet #52

1. $f(x) = x^4$ Find dy if $a = 1$ and $dx = 0.1$

2. Approximate using differentials: $\sqrt[4]{17}$

3. Approximate the change in the volume of a cube if a side is 5 cm has an error of 0.1 cm. ($V = x^3$)

4. The edge of a cube is measured as 10 cm with a possible error of 1%. The cube's volume is to be measured from this estimate. Estimate the percentage error in the volume calculation.

5. The positive root of $x \ln x = 1$, to four decimal places, using Newton's method, is
(A) 1.7013 (B) 1.7462 (C) 1.7577 (D) 1.7632 (E) 1.7730

6. Approximate using differentials and find dy for $(8.4)^{4/3}$

7. Find formula for the approximate Change in the surface area of a cube when the edges all change by an amount dx .

8. A circle is drawn with a radius of 2.25 inches. If the radius is made 2.27 inches instead, approximate the change in circumference of the circle.

9. If $f(x) = \int_1^{x^3} (t^3 - t) dt$, then $f'(1) =$ A) 18 B) 8 C) 6 D) $\frac{1}{2}$ E) 0

10. The absolute maximum of the function $f(x) = \sin x - \cos x$ on the closed interval $[0, p]$ is
A) -1 B) $\sqrt{2}$ C) p D) $\frac{3p}{4}$ E) 0
