

6. If a snowball melts so that its surface area ($S = 4\pi r^2$) decreases at a rate of $4 \text{ cm}^2/\text{min}$, find the rate at which the diameter decreases when the diameter is 12 cm.

Ans: _____.

7. Let $y = f(x)$ be defined implicitly by the equation $x^4 + y^4 = 2$.
- a) Find dy .
- b) Find the linearization of $f(x)$ at $(1, 1)$.

Ans: _____.

Ans: _____.

9. Find the absolute maximum of $f(x) = 4x^{1/2} - x^{3/2}$ in the interval $[0, 4]$.

Ans: _____.

9. The position of a particle in the interval $[1, 3]$ is given by $s(t) = t^2 + t - 4$.
- a) Find the average velocity in this interval.
- b) Find a “ c ” satisfying the MVT on $I = [1, 3]$.

Ans: _____.

Ans: _____.

10. Use l'Hôpital's rule to find:

a) $\lim_{x \rightarrow 0} \frac{1 - \cos x}{5x^2}$.

b) $\lim_{x \rightarrow \infty} \frac{\ln(x^3)}{x}$.

Ans: _____.

Ans: _____.

Extra space