
MATH 182 QUIZ #10 KEY

SHOW ALL WORK NEATLY WHERE APPROPRIATE

1. Taking the derivative implicitly gives: $4y^3 + 5y^4y' = 2y'$

Solving for y' gives: $y' = \frac{-4x^3}{5y^4 - 2}$

2. $y' = \frac{-3x^2 - y^2}{2xy - 1} \Rightarrow m = -\frac{52}{29} \Rightarrow y - 5 = -\frac{52}{29}(x - 3)$

3. $\frac{ds}{dt} = \frac{10}{147} \text{ m/s}$

4. $\frac{dA}{dt} = 48\pi \text{ cm}^2/\text{hr}$

5. a. $E(p) = \frac{2p^2}{-p^2 + 167}$

b. $E(12) = 12.52$

c. It implies that each 1% increase in price will result in approximately a 12.52% decrease in demand.

d. Elastic Demand

e. Demand is relatively sensitive to changes in price.

6. 49 and 7

7. 600 ft \times 300 ft

8. a. $C(6) - C(5) = 63 - 38 = 25$

b. $MC = 6x - 8$

c. $C'(5) = 22$

9. A graph with exactly three points with some sort of sharp corner.

10. Domain: \mathbb{R}

x -int: None

y -int: $(0, 6)$

Vertical: None

Horizontal: $y = 0$

Inc: $(-\infty, 0)$

Dec: $(0, \infty)$

Max: $(0, 6)$

