

MATH 112 – EXAM I Hints and Answers
Spring 2018

1. (3 points each)

(a) i. $\frac{dy}{dx} = 5 \left(\frac{1}{x^3} - 2x^6 \right)^4 (-3x^{-4} - 12x^5)$

ii. $g'(x) = x^{1/2} \cdot (4x^3 + 3x^2 + 2x) + (x^4 + x^3 + x^2) \cdot \frac{1}{2}x^{-1/2}$

(b) $\frac{dp}{dq} = \frac{(q+3)^2 \cdot 100 - 100(q+2) \cdot 2(q+3)}{(q+3)^4}$

(c) $q = 73$ Items

2. (a) (3 points) $x = 1$

(b) (3 points) $x = 0$ and $x = 4$

(c) (4 points) $\frac{g(m+h) - g(m)}{h} = 9 - 2m - h$

3. (2 points each)

(a) i. increase; ii. increase; iii. decrease; iv. decrease; v. increase; vi. stay the same.

(b) $q = 7$ hundred Things

(c) $q = 5$ hundred Things

(d) $q = 0$ hundred Things

4. (2 points each)

(a) 0.50 dollars per Object

(b) MR is a horizontal line with height \$1.45 per Object.

(c) $q \approx 8.2$ and $q \approx 18.5$ Thousand Objects

(d) $q \approx 2$ and $q \approx 15.5$ Thousand Objects

(e) from $q \approx 8.2$ to $q \approx 15.5$ Thousand Objects