

MATH 112 – EXAM II Hints and Answers
Spring 2018

1. (3 points each)

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

ii. $\frac{dw}{du} = \frac{(u+7)e^{20u} \cdot 20 - e^{20u}}{(u+7)^2}$

(b) i. $\int \frac{5}{\sqrt{x^3}} + e^{x/4} dx = \frac{-10}{\sqrt{x}} + 4e^{x/4} + C$

ii. $\int_1^{e^2} \frac{3}{2t} dt = \left[\frac{3}{2} \ln(t) \right]_1^{e^2} = 3$

2. (3 points each)

(a) 1000 feet

(b) $t = 8$ minutes

(c) $G(t) = -2t^3 + 9t^2 + 240t + 726$

(d) 915 feet

3. (4 points each)

(a) $x = -3, 10$

(b) $x = -3$ gives a local max
 $x = 10$ gives a local min

(c) from $x = 3.5$ to $x = 10$

4. (2 points each)

(a) from $q = 0$ to $q = 8$

(b) from $q = 2$ to $q = 14$

(c) NONE

(d) $q = 14$

(e) $q = 2, 14$

(f) profit will decrease by about \$8

(g) $P(2) \approx -73$