

MATH 112 FINAL EXAM
SPRING 2016

1. (a) $t = 1.19$ minutes
(b) $t = 6$ minutes
(c) $B(t) = 15t - 0.625t^2 + 25$
(d) 115 feet
2. (a) 19 hundred dollars
(b) 36.25 hundred dollars
(c) 25.5 hundred dollars
(d) INCREASE by 7 dollars
(e) $TR''(3) = -0.5$
3. (a) $C_x(2, 1) = 21$ and $C_y(2, 1) = 26$. So, you should produce one more tablet.
(b) 120.625 hundred dollars
4. consumer's surplus: \$1822.50; producer's surplus: \$9824.23
5. (a) $y = 20x$
(b) (2, 4) and (5, 6.25)
(c) from $x = 2$ to $x = 5$
6. (a) $\frac{dy}{dx} = \frac{1}{2} \left(9x^2 - x^{-1} + \frac{1}{6} \ln x \right)^{-1/2} \left(18x + x^{-2} + \frac{1}{6x} \right)$
(b) $R_x(x, y) = e^{(x^2y+4x)}(2xy + 4) + \frac{(y-x)y \cdot \frac{1}{x} - y(\ln x)(-1)}{(y-x)^2}$
(c) $\int \frac{x^7 - 5}{x^4} + (x + 1) \left(\frac{1}{x} - 1 \right) dx = \frac{1}{4}x^4 + \frac{5}{3}x^{-3} + \ln x - \frac{1}{2}x^2 + C$
(d) $\int_1^8 \frac{7}{2\sqrt[3]{x}} dx = 15.75$