

MA 22000 Review for Exam 2 Answer Key

- 1) A a) $\frac{9}{8}$ b) $y = \frac{9}{8}x + \frac{19}{8}$ c) $9x - 8y = -19$
B a) $\frac{7}{5}$ b) $y = \frac{7}{5}x - \frac{1}{10}$ c) $14x - 10y = 1$
- 2) vertical line: $x = -5$, horizontal line $y = 3$
- 3) left to right: negative, zero, undefined, positive
- 4) Sketches could not be shown here. The line for part (a) has a y-intercept of 2 and a negative slope. The line for part (b) has a y-intercept of 3 and a positive slope.
- 5) x-intercept: (0, -2); y-intercept: (4, 0) Line intersects these two points.
- 6) $2x + 3y = 6$
- 7) $y = -\frac{5}{6}x + \frac{31}{6}$
- 8) $M = 60x + 165$, \$345
- 9) (a) $m = \frac{28}{5}$, (b) $P = \frac{28}{5}t + 9$, (c) 65%
- 10) -3.68, -3.9698, -3.996998, -4.002998, -4.0298, 04.28
limit is approximately -4
- 11) (a) $\frac{8}{7}$ (b) $\frac{1}{4}$ (c) $\frac{1}{8}$ (d) $\frac{2}{3}$ (e) 0
- 12) (a) -32, (b) $\frac{3}{5}$ or 0.6
- 13) 15
- 14) (a) 10, (b) 4
- 15) There are no derivatives when $x = -3, -1, 0, 3, \text{ or } 5$.
- 16) (a) \$0, (breaking even), (b) -2 or losing \$2/item
- 17) $y' = 15x^4 - 18x^2 + x - 2$

- 18) $f'(x) = \frac{-40}{x^5} + \frac{21}{x^4} + 3$
- 19) $g'(x) = 8x(2x^2 - 5)$ or $16x^3 - 40x$
- 20) $y' = 24x^3 - 36x^2 + 22x - 4$
- 21) $q'(x) = \frac{-7(x^2 + 2)}{(x^2 - 2)^2}$
- 22) 19
- 23) $(-4, -6)$ and $(-2, -20)$
- 24) $y = -2x + 9$
- 25) at 5 hours: growing at 6000/hour at 8 hours: growing at 3072/hour
- 26) $f(g(x)) = 9 - 8x^2 - 16x$
 $g(f(x)) = 64x^2 - 160x + 99$
- 27) most common answer: $g(x) = 12 + 5x$, $f(x) = -\sqrt{x}$
- 28) $4860x^9(x^2 + 4)^4(x^2 + 2)$
- 29) $8(3t^2 - 4)^2(21t^2 - 4)$
- 30) $\frac{-64x}{(4x^2 - 3)^5}$
- 31) $y = x + 3$
- 32) at 0 hours: increasing at 9 million/hour,
at 8 hours: increasing at approximately 29.6 million/hour