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) -64, (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, 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