Answers to MA 22000 Review Worksheet for Exam 1, Fall 2013

1) a) 4 terms, degree 3, leading term is $-x^3$
b) 5 terms, degree 4, leading term is n^4

2) $5x+9xy+6x^2y-10xy^2$

3) a) $4a^2+2a-8$ b) $2n^3+12n^2-5n+5$
c) $\frac{13}{12}a+\frac{22}{15}$

4) $15r+13$

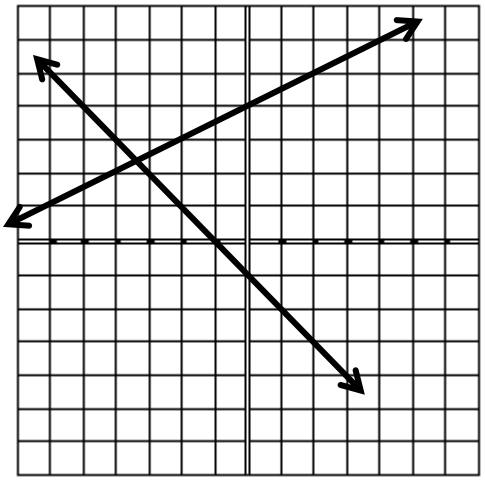
5) a) It is not a function. $D=\{-3,\ -1,\ 0,\ 1,\ 2,\ 3,\ 5,\ 9\}$ $R=\{-6,\ 0,\ 1,\ 2,\ 4,\ 5,\ 8,\ 10\}$
b) It is a function. $D=[0,4]$ $R=[-2,2]$
c) It is a function. $D=(-\infty,\infty)$ $R=[0,\infty)$
d) It is a function. $D=[5,\infty)$ $R=[0,\infty)$
e) It is a function. $D=(-\infty,2)\cup(2,\infty)$
f) It is not a function. $D=[0,\infty)$ $R=(-\infty,\infty)$

6) a) $f(3)=7$ b) $g(-1)=1$
c) $h(3a-2)=\frac{6a+1}{9a-7}$ d) $f(-15)=241$
e) $g(3)=3$ f) $h\left(\frac{1}{3}\right)$ is not a real number

7) a) $F(3\pi)=-5\pi$ b) $F(h-4\pi)=-2h+9\pi$

8) a) $g(-1)=2$ b) $x=-1$ c) $g\left(\frac{1}{2}\right)=5$

9)



The scale on each axis is 1 unit per hash mark. Graph for part (a) is the line with the positive slope (rising) and the graph for part (b) is the line with the negative slope (falling).

10) 164.98 centimeters

11) $6y^6-12y^5+27y^4-21y^3-18y^2$

12) $12a^2 - 11a - 36$

13) $90x^3 - 135x^2 + 50x$

14) $12n^3 + 5n^2 + 5n + 6$

15) $24x^3 - 32x^2 + 28x - 15$

16) a) $36x^2 - \frac{1}{4}$ b) $144x^2 - 120x + 25$

17) $8x^3 + 34x^2 + 5x - 12$

18) Area = $2x^2 + 24x - 26$

19) Volume = $2x^3 + 31x^2 + 110x - 63$

20) $x = \frac{48}{7}$

21) $x = -\frac{5}{2}$

22) $x = 130$

23) $x = 7$

24) $x = \frac{5}{2}$

25) $t = -15$

26) no solution

27) $4000 was invested in the bond.

28) 40 mL of the 6% solution was added.

29) The car had been following the truck for $\frac{13}{14}$ hours or approximately 55.7 minutes.

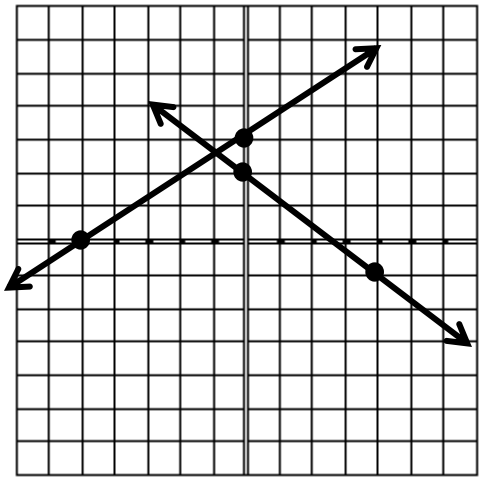
30) Distance is 2 miles.

31) Helen's time alone is 2/3 hour or 40 minutes.

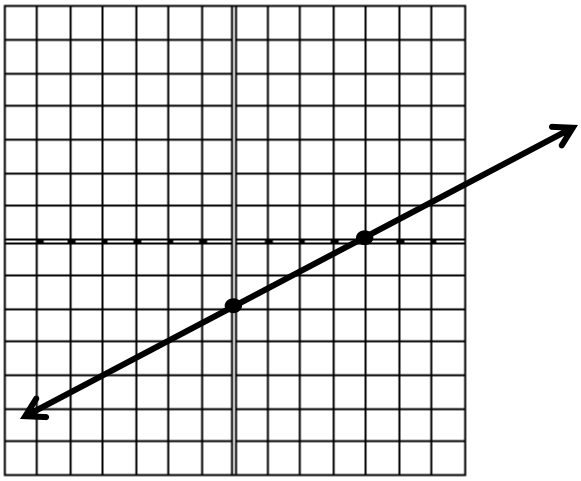
32) *A* slope: $\frac{9}{8}$ *B* $\frac{7}{5}$

33) vertical line: $x = -5$ horizontal line: $y = 3$

34) First line has a negative slope. Second has a zero slope. Third has an undefined slope. The fourth line has a positive slope.



35) The graph above with the positive slope is graph (b). The graph with the negative slope is graph (a).



36) *x*-intercept is (4, 0) and *y*-intercept is (0, -2)

37) $2x+3y=6$

38) $y=-\frac{5}{6}x+\frac{31}{6}$

39) Let *x* = total family members $F(x)=60x+105$, \$345

40) (a) (0, 9) and (5, 37) $m=\frac{28}{5}$ (b) $P=\frac{28}{5}y+9$, where *P* is the percent of households with access to high-speed internet and *y* is the number of years since 2000

c) 65%