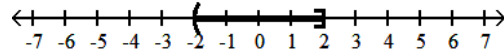


MATH 035 and MATH 043 REVIEW for FINAL EXAM

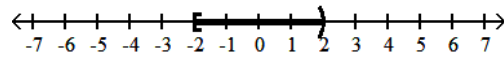
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Solve and graph: $-20 \leq 8x - 4$ and $2x + 7 < 11$ 1) _____

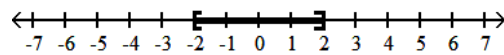
A) $(-2, 2]$



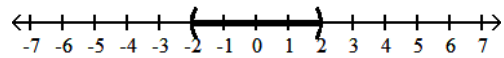
B) $[-2, 2)$



C) $[-2, 2]$



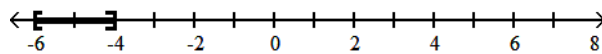
D) $(-2, 2)$



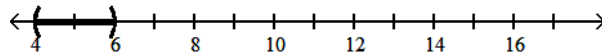
2) Solve the compound inequality. Express the solution using interval notation. Graph the solution set: 2) _____

$$x \leq 4 \text{ or } x \geq 6$$

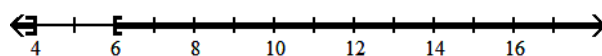
A) $[-6, -4]$



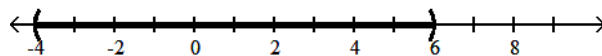
B) $(4, 6)$



C) $(-\infty, 4] \cup [6, \infty)$



D) $(-4, 6)$



3) Solve: $8 \leq 2t + 4 \leq 18$ 3) _____

- A) $[-7, -2]$ B) $(-7, -2)$ C) $(2, 7)$ D) $[2, 7]$

4) Solve the equation: $|5m + 2| + 7 = 12$ 4) _____

- A) No solution B) $-\frac{3}{5}, \frac{7}{5}$ C) $\frac{3}{5}, -\frac{7}{5}$ D) $\frac{3}{2}, -\frac{7}{2}$

5) Solve. Give your answer using interval notation: $|x + 6| > 3$ 5) _____

- A) $(-\infty, -9) \cup (-3, \infty)$ B) No solution
C) $(-3, -9)$ D) $(-3, \infty)$

6) Solve the absolute value inequality. Write your answer in interval notation: 6) _____

$$\left| \frac{5 - 2x}{6} \right| \leq 3$$

- A) No solution B) $\left[-\frac{13}{2}, \frac{23}{2}\right]$
C) $\left[-\frac{13}{2}, \frac{23}{2}\right)$ D) $\left[-\infty, -\frac{13}{2}\right] \cup \left[\frac{23}{2}, \infty\right)$

7) Find the slope of the line containing the points: $(5, -6)$ and $(1, 9)$ 7) _____

- A) $\frac{1}{2}$ B) $-\frac{15}{4}$ C) $\frac{15}{4}$ D) $-\frac{4}{15}$

8) Find a linear function whose graph has a slope of 6 and y-intercept at $(0, -10)$. 8) _____

- A) $f(x) = 6x + 10$ B) $f(x) = 6x + 6$
C) $f(x) = -10x - 6$ D) $f(x) = 6x - 10$

9) Determine the slope and the y-intercept: $2x - 5y = -5$ 9) _____

A) Slope $\frac{2}{5}$, y-intercept (0, 1)

B) Slope $-\frac{2}{5}$, y-intercept (0, -1)

C) Slope -2, y-intercept (0, 1)

D) Slope 2, y-intercept (0, -1)

10) Find an equation of the line with slope of $-\frac{4}{5}$ containing the point (11, -3). 10) _____

A) $y = \frac{4}{5}x - \frac{29}{5}$

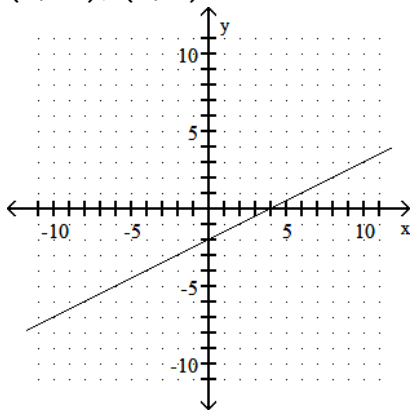
B) $y = -\frac{4}{5}x + \frac{59}{5}$

C) $y = -\frac{4}{5}x + \frac{41}{5}$

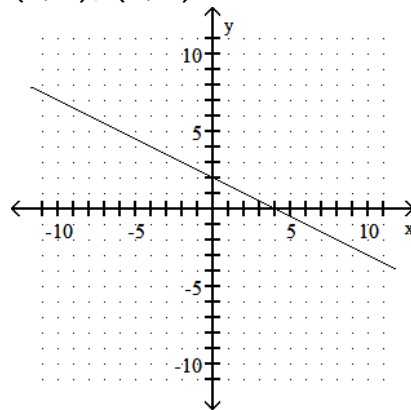
D) $y = -\frac{4}{5}x + \frac{29}{5}$

11) Find the intercepts and then graph the line: $-3x - 6y = 12$ 11) _____

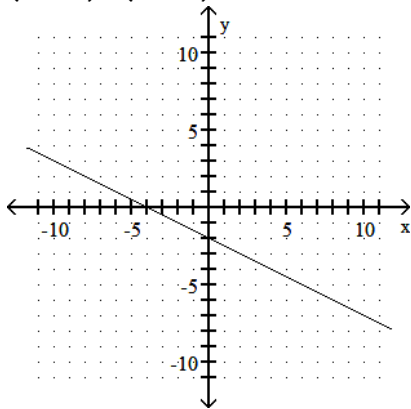
A) (0, -2); (4, 0)



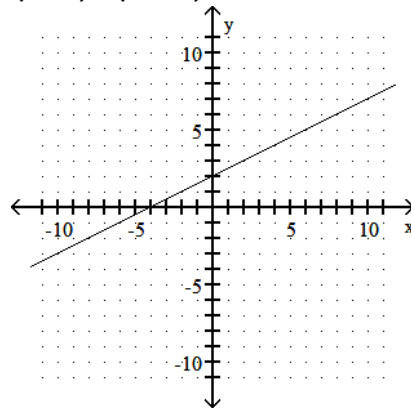
B) (0, 2); (4, 0)



C) (0, -2); (-4, 0)



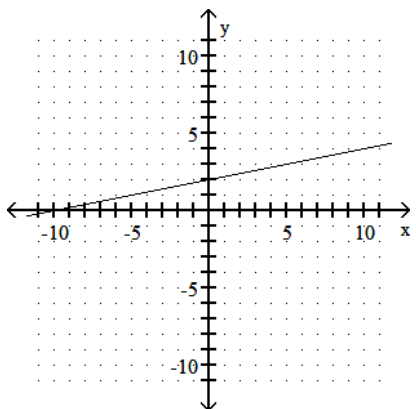
D) (0, 2); (-4, 0)



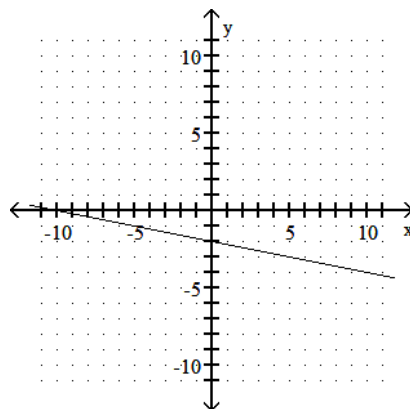
12) Draw a line that has the given slope and y-intercept: $m = \frac{1}{5}$, $b = 2$

12) _____

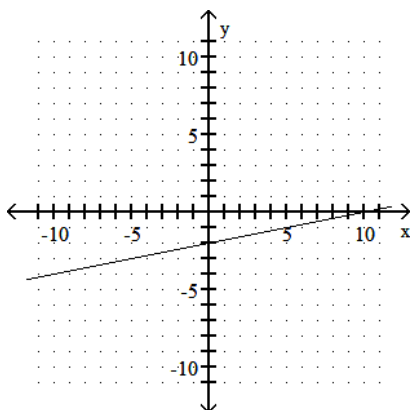
A)



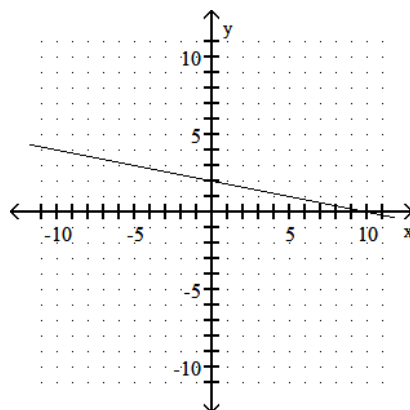
B)



C)



D)



13) Find an equation of the line that goes through the point (9, 8).

13) _____

A) $y = 9$

B) $x = 9$

C) $x = 8$

D) $y = 8$

14) Write an equation of the line that goes through the point (-8, 7) and is perpendicular to the line $-4x + 3y = 11$.

14) _____

A) $y = -\frac{4}{3}x - \frac{4}{3}$

B) $y = \frac{3}{4}x + 1$

C) $y = -\frac{3}{4}x + 1$

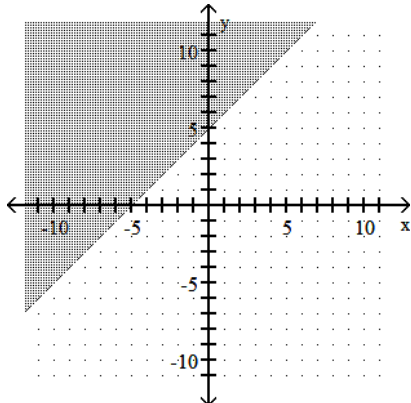
D) $y = -\frac{8}{3}x - \frac{11}{3}$

15) Graph the inequality on a plane:

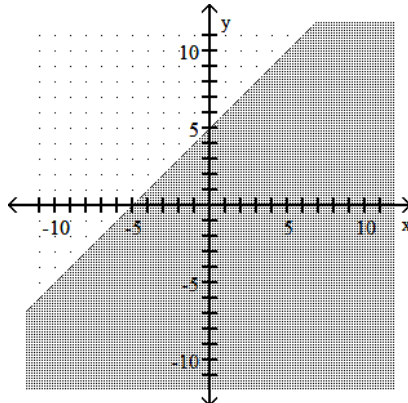
$$x - y > -5$$

15) _____

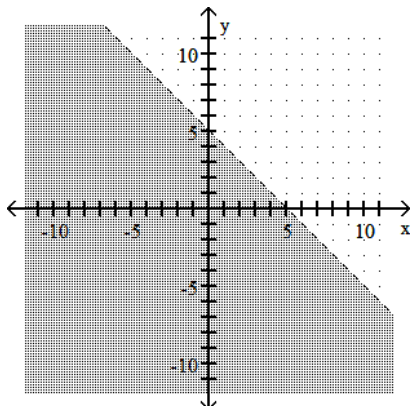
A)



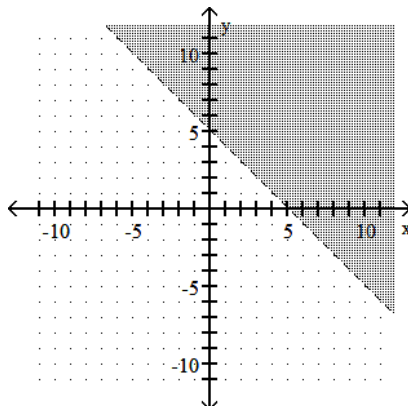
B)



C)



D)



16) When making a telephone call using a calling card, a call lasting 5 minutes costs \$1.60. A call lasting 15 minutes costs \$4.10. Let y be the cost of making a call lasting x minutes using a calling card. Write a linear equation that models the cost of making a call lasting x minutes.

16) _____

A) $y = -0.25x + 2.85$

B) $y = 4x - \frac{92}{5}$

C) $y = 0.25x - 10.9$

D) $y = 0.25x + 0.35$

17) Find an equation of the line containing the points $(-3, 5)$ and $(-6, 17)$.

17) _____

A) $y = -7x - 4$

B) $y = 4x - 7$

C) $y = -7x + 4$

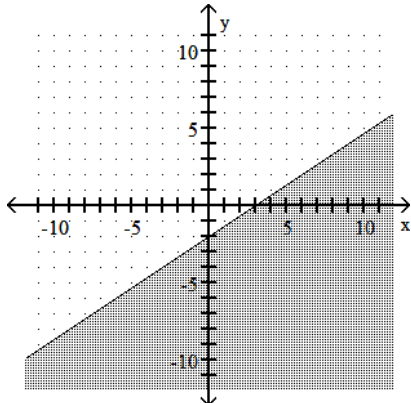
D) $y = -4x - 7$

18) Graph the inequality on a plane:

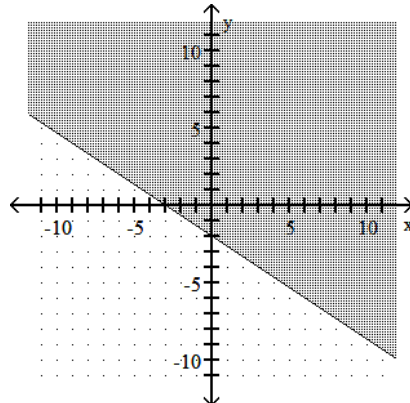
$$2x + 3y \geq -6$$

18) _____

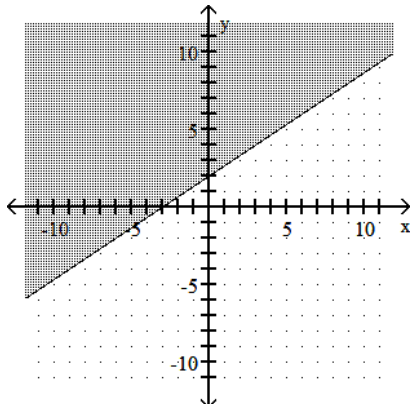
A)



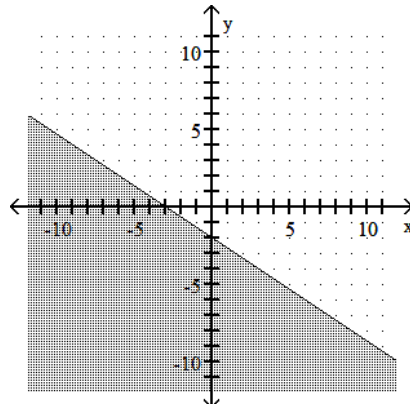
B)



C)

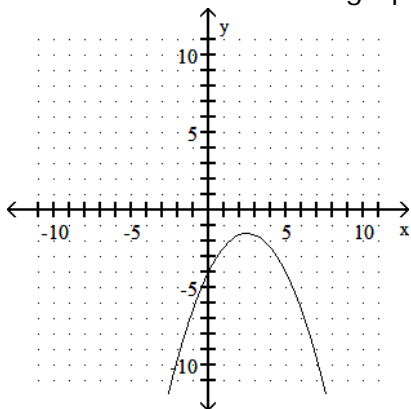


D)



19) Determine whether the graph is the graph of a function.

19) _____

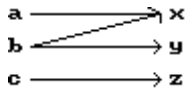


A) Not a function

B) Function

20) Is the following correspondence a function?

20) _____



A) No

B) Yes

21) Find $f(-1)$ when $f(x) = 3x^2 + 4x - 2$.

21) _____

A) 1

B) -5

C) -3

D) 5

22) The altitude above sea level of an airplane just after taking off from an airport on a high plateau is given by the linear function $h(t) = 1200t + 3052$, where $h(t)$ is in feet and t is the time in minutes since take-off. Find the altitude of the airplane after 8 minutes.

22) _____

A) 12,552 ft

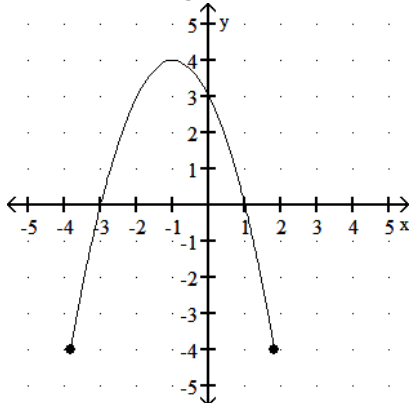
B) 12,652 ft

C) 9600 ft

D) 12,752 ft

23) Find the range.

23) _____



A) $\{x | -5 \leq x \leq 5\}$

B) $\{x | -1 \leq x \leq 1\}$

C) $\{x | -3.83 \leq x \leq 1.83\}$

D) $\{x | -4 \leq x \leq 4\}$

24) Find the domain: $f(x) = \frac{-5}{2-x}$

24) _____

A) $\{x | x \text{ is a real number and } x \neq 2\}$

B) $\{x | x \text{ is a real number and } x \neq -5\}$

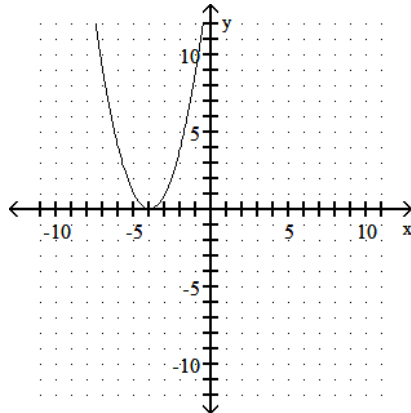
C) $\{x | x \text{ is a real number and } x \neq 5\}$

D) $\{x | x \text{ is a real number and } x \neq -2\}$

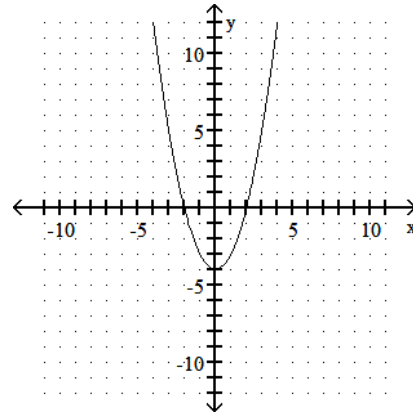
25) Graph the function: $h(x) = x^2 - 4$

25) _____

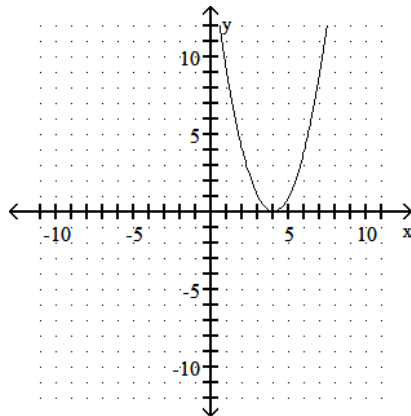
A)



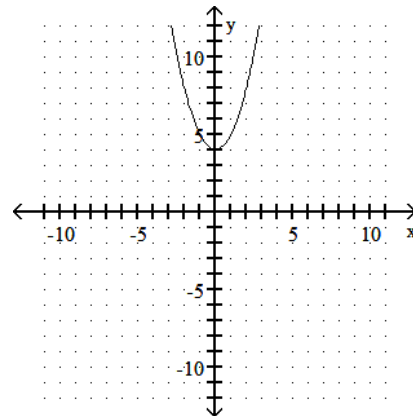
B)



C)



D)



26) Solve the system of equations:

$$\begin{aligned}x + y &= 1 \\ y &= -2x + 5\end{aligned}$$

26) _____

A) (4, -3)

B) (3, 1)

C) (5, -10)

D) (-3, 4)

27) Solve the system of equations:

$$\begin{aligned}-2x + 5y &= -33 \\ -7x + 3y &= -43\end{aligned}$$

27) _____

A) (-4, -5)

B) (4, 5)

C) (-4, 5)

D) (4, -5)

28) There were 350 people at a play. The admission price was \$2 for adults and \$1 for children. The admission receipts were \$510. How many adults and how many children attended? 28) _____

- A) 190 adults and 160 children
- C) 160 adults and 190 children

- B) 95 adults and 255 children
- D) 127 adults and 223 children

29) Solve the system of equations: $-6x + 4y = 5$ 29) _____
 $-12x + 8y = -10$

- A) infinitely many solutions
- C) (-30, 20)

- B) (30, -20)
- D) no solution

30) A vendor sells hot dogs and bags of potato chips. A customer buys 5 hot dogs and 4 bags of potato chips for \$18.50. Another customer buys 4 hot dogs and 4 bags of potato chips for \$16.00. Find the cost of each item. 30) _____

- A) \$2.75 for a hot dog; \$1.75 for a bag of potato chips
- B) \$2.50 for a hot dog; \$1.50 for a bag of potato chips
- C) \$2.50 for a hot dog; \$1.75 for a bag of potato chips
- D) \$1.50 for a hot dog; \$2.50 for a bag of potato chips

31) Find the quotient: $\frac{x^2 + 15x + 56}{x + 8}$ 31) _____

- A) $x + 7$
- B) $x^3 - 48$
- C) $x^2 + 7$
- D) $x - 48$

32) Find the quotient: $(p^2 + 2p - 28) \div (p + 7)$ 32) _____

- A) $p + 5 + \frac{7}{p + 7}$
- C) $p - 7 + \frac{5}{p + 7}$
- B) $p - 5$
- D) $p - 5 + \frac{7}{p + 7}$

33) Find the quotient: $\frac{x^2 - 5}{x - 3}$ 33) _____

A) $x + \frac{4}{x - 3}$

B) $x + 4$

C) $x + 3$

D) $x + 3 + \frac{4}{x - 3}$

34) Solve: $15n^2 + 25n = 0$ 34) _____

A) $-\frac{5}{3}$

B) $-\frac{5}{3}, 25$

C) 0

D) $-\frac{5}{3}, 0$

35) Solve: $(x + 3)(x + 1) = 35$ 35) _____

A) -4, 8

B) 1, 3

C) -3, -1

D) -8, 4

36) Solve: $x^2 = 225$ 36) _____

A) 112.5

B) ± 16

C) ± 15

D) 15

37) Solve: $(p + 3)^2 = 13$ 37) _____

A) $\sqrt{13} - 3$

B) $\sqrt{13} + 3, -\sqrt{13} + 3$

C) $\sqrt{13} - \sqrt{3}$

D) $\sqrt{13} - 3, -\sqrt{13} - 3$

38) Solve: $2x^2 + 7x = -8$ 38) _____

A) $\frac{7}{4} \pm \frac{\sqrt{15}i}{4}$

B) $-\frac{7}{4} \pm \frac{\sqrt{15}i}{4}$

C) $\frac{7}{4} \pm \frac{\sqrt{15}}{4}$

D) $-\frac{7}{4} \pm \frac{\sqrt{15}}{4}$

39) A ball is thrown downward from a window in a tall building. Its position at time t in seconds is $s = 16t^2 + 32t$, where s is in feet. How long (to the nearest tenth) will it take the ball to fall 217 feet? 39) _____

A) 2.8 sec

B) 2.6 sec

C) 7.8 sec

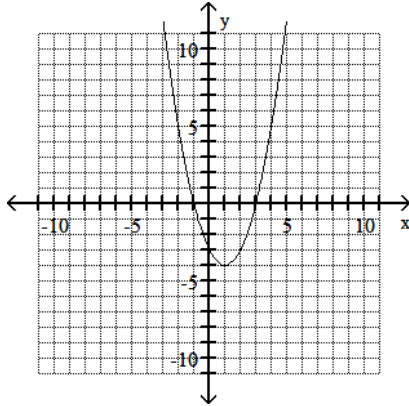
D) 3.7 sec

40) Find the vertex, the y-intercept, and the x-intercepts (if any exist), and graph the function:

40) _____

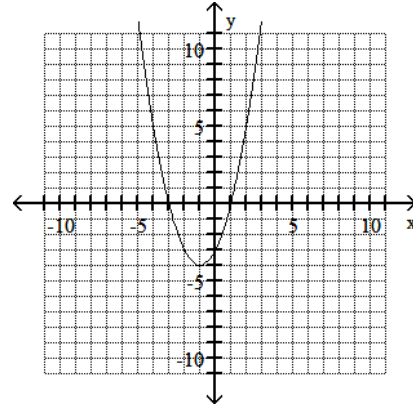
$$f(x) = x^2 - 2x - 3$$

A)



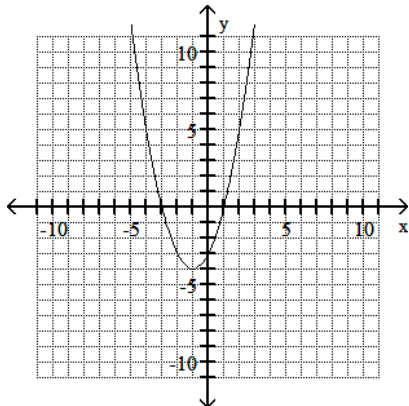
Vertex (1, -4);
 x-int = (1,0) and (3, 0);
 y-int = (0, -3)

B)



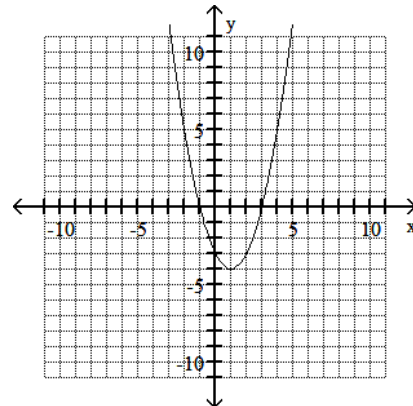
Vertex (-1, -4);
 x-int = (-3,0) and (1, 0);
 y-int = (0, -3)

C)



Vertex (-1, -4);
 x-int = (-3,0) and (1, 0);
 y-int = (0, 3)

D)



Vertex (1, -4);
 x-int = (-1,0) and (3, 0);
 y-int = (0, -3)

41) Find the vertex: $f(x) = x^2 - 10x + 34$

41) _____

A) (0, 9)

B) (5, 34)

C) (0, 34)

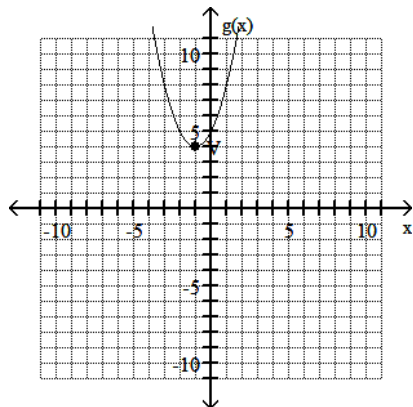
D) (5, 9)

42) Find the vertex, the y-intercept, and the x-intercepts (if any exist), and graph the function:

42) _____

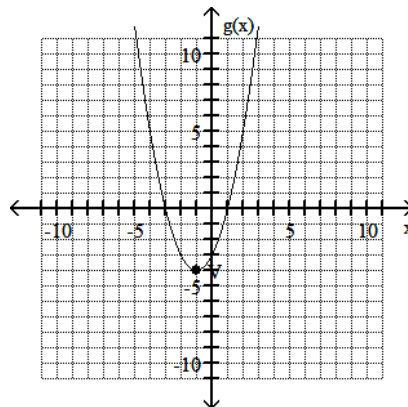
$$g(x) = x^2 - 2x + 5$$

A)



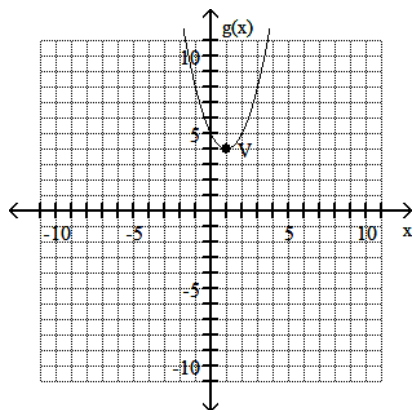
Vertex $(-1, 4)$
no x-intercepts;
y-int = $(0, 5)$

B)



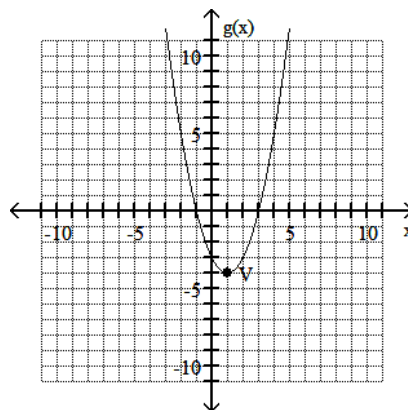
Vertex $(-1, -4)$
x-int = $(-3, 0), (1, 0)$;
y-int = $(0, -3)$

C)



Vertex $(1, 4)$
no x-intercepts;
y-int = $(0, 5)$

D)



Vertex $(1, -4)$
x-int = $(-1, 0), (3, 0)$;
y-int = $(0, -3)$

43) Find the x- and y-intercepts: $f(x) = 2x^2 + 6x + 2$

43) _____

A) $\left\{ \frac{-3 \pm \sqrt{13}}{2}, 0 \right\}, (0, -2)$

B) $\left\{ \frac{-3 \pm \sqrt{5}}{2}, 0 \right\}, (0, 2)$

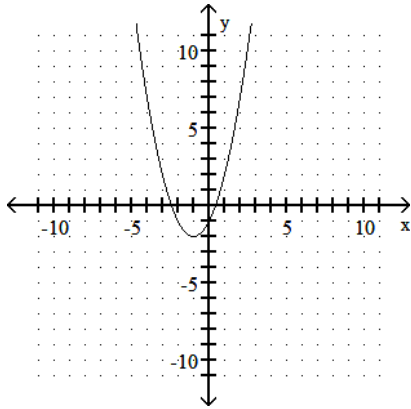
C) $\left\{ \frac{-6 \pm \sqrt{5}}{2}, 0 \right\}, (0, 2)$

D) $\left\{ \frac{-3 \pm \sqrt{5}}{4}, 0 \right\}, (0, -2)$

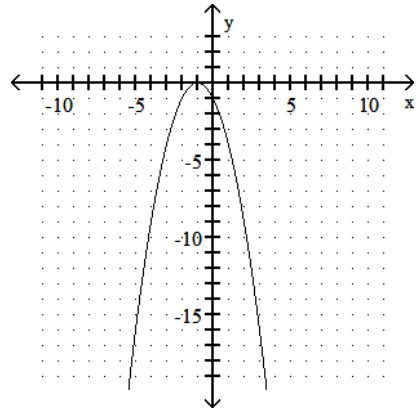
44) Graph: $f(x) = -x^2 - 2x - 1$

44) _____

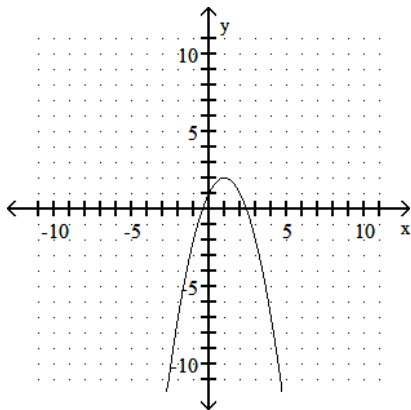
A)



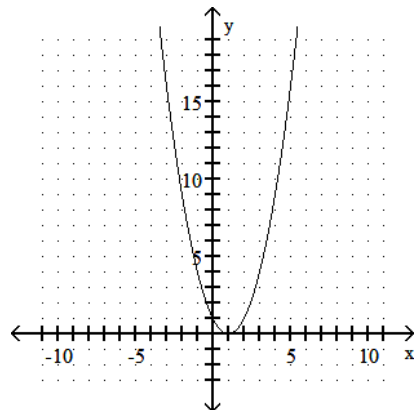
B)



C)



D)



45) Express in terms of i: $\sqrt{-152}$

45) _____

A) $2\sqrt{38}$

B) $2i\sqrt{38}$

C) $-2i\sqrt{38}$

D) $-2\sqrt{38}$

46) Simplify: $(4 - 7i) + (3 + 2i)$

46) _____

A) $7 - 5i$

B) $1 + 9i$

C) $7 + 5i$

D) $-7 + 5i$

47) Simplify: $(6 + 5i)(5 + 9i)$

47) _____

A) $75 - 29i$

B) $-15 + 79i$

C) $-15 - 79i$

D) $45i^2 + 79i + 30$

48) Simplify: i^{18} 48) _____

- A) -1 B) i C) 1 D) $-i$

49) Simplify to the form $a + bi$: $\frac{7 + 13i}{20i}$ 49) _____

- A) $\frac{13}{20} + \frac{7}{20}i$ B) $-\frac{13}{20} - \frac{7}{20}i$ C) $-\frac{13}{20} + \frac{7}{20}i$ D) $\frac{13}{20} - \frac{7}{20}i$

50) Simplify to the form $a + bi$: $\frac{2 + 3i}{5 + 3i}$ 50) _____

- A) $\frac{19}{34} + \frac{9}{34}i$ B) $\frac{1}{34} - \frac{21}{34}i$ C) $\frac{1}{16} - \frac{9}{16}i$ D) $\frac{19}{16} - \frac{9}{16}i$

51) Find all numbers for which the rational expression is not defined: 51) _____
 $\frac{x^2 - 64}{x^2 + 6x - 16}$

- A) $x = 0$ B) $x = 8$ and $x = -8$
C) $x = -8$ and $x = 2$ D) $x = 8$ and $x = -2$

52) Simplify: $\frac{x^2 + 11x + 30}{x^2 + 12x + 36}$ 52) _____

- A) $\frac{11x + 5}{12x + 6}$ B) $\frac{11x + 30}{12x + 36}$
C) $\frac{x + 5}{x + 6}$ D) $-\frac{x^2 + 11x + 30}{x^2 + 12x + 36}$

53) Simplify: $\frac{5 - x}{4x - 20}$ 53) _____

- A) 4 B) -4 C) $-\frac{1}{4}$ D) $\frac{1}{4}$

54) Find the product and simplify: $\frac{4x^2}{5} \cdot \frac{25}{x^3}$ 54) _____

A) $\frac{x}{31}$

B) $\frac{20}{x}$

C) $\frac{20x^2}{x^3}$

D) $\frac{x^5}{31}$

55) Find the product and simplify: $\frac{x^2 + 12x + 35}{x^2 + 14x + 45} \cdot \frac{x^2 + 9x}{x^2 + 5x - 14}$ 55) _____

A) $\frac{x(x + 9)}{x - 2}$

B) $\frac{1}{x - 2}$

C) $\frac{x}{x - 2}$

D) $\frac{x}{x^2 + 14x + 45}$

56) Find the quotient and simplify: $\frac{y^3 + 3y}{y^2 - 9} \div \frac{y^2 + 11y + 30}{y^2 + 2y - 15}$ 56) _____

A) $\frac{(y + 3)(y + 6)}{y(y^2 + 3)}$

B) $\frac{y}{y + 6}$

C) $\frac{y(y^2 + 3)}{(y + 3)(y + 6)}$

D) $\frac{(y - 3)(y - 6)}{y(y^2 + 3)}$

57) Simplify: $\frac{\frac{2}{a} + 2}{\frac{2}{a} - 2}$ 57) _____

A) $\frac{a^2}{2 - a^2}$

B) $2 - a^2$

C) $\frac{2(1 + a)}{1 - a}$

D) $\frac{1 + a}{1 - a}$

58) Simplify: $\frac{\frac{5}{x} + \frac{6}{x^2}}{\frac{25}{x^2} - \frac{36}{x}}$ 58) _____

A) $\frac{1}{5 - 6x}$

B) $\frac{5x + 6}{25 - 36x}$

C) $\frac{1}{5x - 6}$

D) $\frac{5x^2 + 6}{25 - 36x}$

59) Perform the indicated operation. Simplify if possible: $\frac{4x}{x-5} - \frac{20}{x-5}$ 59) _____

- A) $4x$ B) $\frac{4x-20}{x-10}$ C) 4 D) $\frac{1}{4}$

60) Perform the indicated operation. Simplify if possible: $\frac{5}{r} + \frac{7}{r+6}$ 60) _____

- A) $\frac{-30r-12}{r(-6-r)}$ B) $\frac{-30r-12}{r(r+6)}$ C) $\frac{12r+30}{r(-6-r)}$ D) $\frac{12r+30}{r(r+6)}$

61) Perform the indicated operation. Simplify if possible: $\frac{5x}{x^2-5x+6} - \frac{20}{x^2-6x+8}$ 61) _____

- A) $\frac{x-6}{(x-3)(x-4)}$ B) $\frac{5x-20}{(x-2)(x-3)(x-4)}$
C) $\frac{5(x-6)}{(x-3)(x-4)}$ D) $\frac{5}{(x-2)(x-3)}$

62) Perform the indicated operation. Simplify if possible: $\frac{2ab}{a^2-b^2} - \frac{b}{a-b} + 4$ 62) _____

- A) $\frac{4a+5b}{a^2-b^2}$ B) $\frac{4a+5b}{a+b}$
C) $\frac{2ab-b+4}{a+b+1}$ D) $\frac{(a-b)(4a+5b)}{a^2-b^2}$

63) Solve: $\frac{5-a}{a} + \frac{3}{4} = \frac{7}{a}$ 63) _____

- A) 4 B) -4 C) 8 D) -8

64) Solve: $\frac{1}{x+7} + \frac{2}{x+3} = \frac{-4}{x^2 + 10x + 21}$ 64) _____

A) -7 B) 0 C) no solution D) 3

65) Rewrite without rational exponents, and simplify, if possible: $m^{8/3}$ 65) _____

A) $\frac{1}{\sqrt[8]{m}}$ B) $\sqrt[3]{m^8}$ C) $\sqrt[8]{m^3}$ D) $\sqrt[24]{m}$

66) Rewrite with rational exponents: $\sqrt{x^7}$ 66) _____

A) $x^{-7/2}$ B) $x^{-2/7}$ C) $-x^{2/7}$ D) $x^{7/2}$

67) Simplify the expression: $\frac{x^{-1/3} \cdot x^{3/2}}{x^{-2/7}}$ 67) _____

A) $\frac{1}{x^{37/42}}$ B) $x^{37/42}$ C) $\frac{1}{x^{61/42}}$ D) $x^{61/42}$

68) Simplify the expression: $z^{3/4}(z^{1/4} - z^{-1/4})$ 68) _____

A) $z - z^{1/2}$ B) $z^{1/2} - z$ C) $z^{1/2} + 2z$ D) $z + z^{1/2}$

69) Simplify: $\sqrt{98}$ 69) _____

A) 7 B) $49\sqrt{2}$ C) $7\sqrt{2}$ D) 9

70) Simplify: $\sqrt{75k^7q^8}$ 70) _____

A) $5k^3q^4\sqrt{3}$ B) $5k^7q^8\sqrt{3k}$ C) $5k^3q^4\sqrt{3k}$ D) $5q^4\sqrt{3k^7}$

71) Simplify: $\sqrt[3]{\frac{y^{10}}{27}}$ 71) _____

A) $\frac{y^3\sqrt[3]{y}}{3}$

B) $\frac{y^3 + \sqrt[3]{y}}{3}$

C) $y^3 - 3\sqrt[3]{y}$

D) $3y^3\sqrt[3]{y}$

72) Simplify: $\sqrt{2x} + 6\sqrt{32x} + 8\sqrt{8x}$ 72) _____

A) $15\sqrt{42x}$

B) $40\sqrt{2x}$

C) $14\sqrt{42x}$

D) $41\sqrt{2x}$

73) Simplify: $(3\sqrt{3} - 8)^2$ 73) _____

A) $-37 - 48\sqrt{3}$

B) $19 - 48\sqrt{3}$

C) $91 + 48\sqrt{3}$

D) $91 - 48\sqrt{3}$

74) Simplify: $\frac{7}{\sqrt{125x}}$ 74) _____

A) $\frac{\sqrt{35x}}{25x}$

B) $\frac{7\sqrt{5x}}{25x}$

C) $\frac{7\sqrt{x}}{5x}$

D) $\frac{7\sqrt{125x}}{125x}$

75) Simplify: $\frac{\sqrt{3} - \sqrt{4}}{\sqrt{3} + \sqrt{4}}$ 75) _____

A) $7 + 2\sqrt{12}$

B) $7 - 2\sqrt{12}$

C) $2\sqrt{12} - 7$

D) $-7 - 2\sqrt{12}$

76) Solve: $\sqrt{4x - 1} + 6 = 9$ 76) _____

A) $\frac{2}{5}$

B) 40

C) $\frac{5}{2}$

D) \emptyset

77) Solve: $\sqrt{3 - x} = x - 1$ 77) _____

A) 2

B) -1

C) -1, 2

D) \emptyset

MATH 035 and MATH 043

Answer Key for FINAL EXAM REVIEW

- | | |
|-------|-------|
| 1) B | 48) A |
| 2) C | 49) D |
| 3) D | 50) A |
| 4) C | 51) C |
| 5) A | 52) C |
| 6) B | 53) C |
| 7) B | 54) B |
| 8) D | 55) C |
| 9) A | 56) C |
| 10) D | 57) D |
| 11) C | 58) B |
| 12) A | 59) C |
| 13) B | 60) D |
| 14) C | 61) C |
| 15) B | 62) B |
| 16) D | 63) D |
| 17) D | 64) C |
| 18) B | 65) B |
| 19) B | 66) D |
| 20) A | 67) D |
| 21) C | 68) A |
| 22) B | 69) C |
| 23) D | 70) C |
| 24) A | 71) A |
| 25) B | 72) D |
| 26) A | 73) D |
| 27) D | 74) B |
| 28) C | 75) C |
| 29) D | 76) C |
| 30) B | 77) A |
| 31) A | |
| 32) D | |
| 33) D | |
| 34) D | |
| 35) D | |
| 36) C | |
| 37) D | |
| 38) B | |
| 39) A | |
| 40) D | |
| 41) D | |
| 42) C | |
| 43) B | |
| 44) B | |
| 45) B | |
| 46) A | |
| 47) B | |

MATH 035 - 043 Formulas

Graphing formulas: $m = \frac{y_2 - y_1}{x_2 - x_1}$ $y - y_1 = m(x - x_1)$

Formula for factoring a sum of cubes: $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

Formula for factoring a difference of cubes: $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Vertex formula: $\left(\frac{-b}{2a}, f\left(\frac{-b}{2a}\right)\right)$