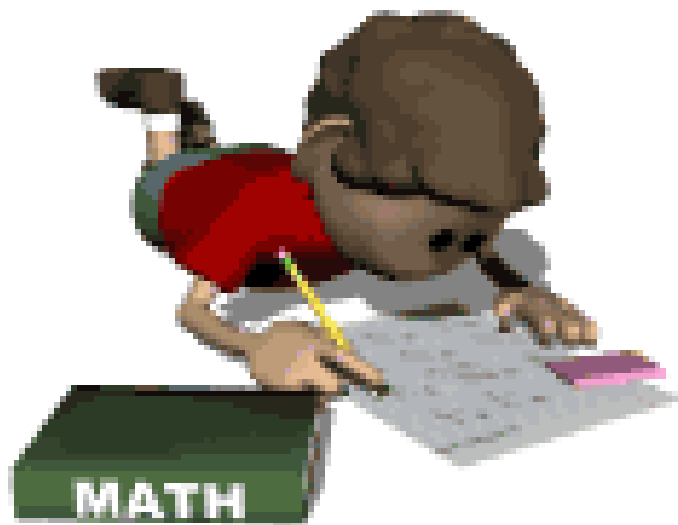


Mathematics 20-1

Course Review Assignment



Name: _____

Mathematics 20-1
Sequences and Series
Final Exam Review Assignment

Name: _____

Date: _____

1. Given this arithmetic sequence. 6, 9.5, 13, 16.5.....

a) Determine the simplified general term t_n

b) Determine the term t_{12}

2. For the arithmetic sequence $t_6 = 86$ and $t_9 = 50$, determine t_{15}

3. In the arithmetic sequence -16, 5, 26, 47.....what is the number of the term whose value is 866?

4. Find the sum of this arithmetic series $7 + 18 + 29 + \dots + 381$

5. A theater has 60 seats in the first row, 68 seats in the second row, 76 seats in the third row, and so on in the same increasing pattern. If the theater has 20 rows of seats, how many seats are in the theater?

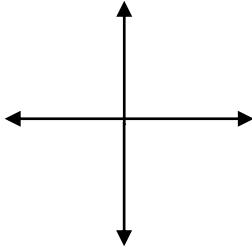
6. Given that $t_2=20$ and $t_4=500$. Determine the general term for the geometric sequence and t_8 .
7. Calculate S_6 given the geometric series $4-8+16-32+\dots$
8. Determine the sum of this geometric series. $3+12+48+\dots+49152$
9. The third term of a geometric sequence is 3 and the sixth term is $\frac{1}{9}$. Find the first term.
10. a) State the general term of this geometric sequence. $32, 16, 8, 4, \dots$
- b) Find the value of the infinite series.

Mathematics 20-1
Chapter 2: Trigonometry
Final Exam Review Assignment

Name: _____

Date: _____

1. Sketch 132° in standard position. In which quadrant does the terminal arm lie? What is the reference angle?



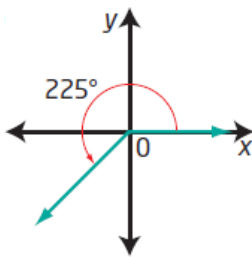
Quadrant: _____

Reference Angle: _____

2. Determine the measure of an angle in standard position given that its reference angle is 20° and the terminal arm lies in quadrant III.

3. A windshield wiper has a length of 40 cm. The wiper rotates from a resting position at 30° , in standard position, to 150° . Determine the exact horizontal distance that the tip of the wiper travels in one swipe.

4. Determine the exact value of the sine, cosine, and tangent ratios for the given angle.

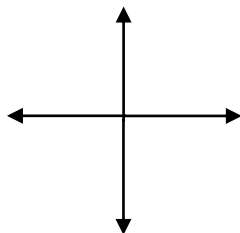


$\sin 225^\circ = \underline{\hspace{2cm}}$

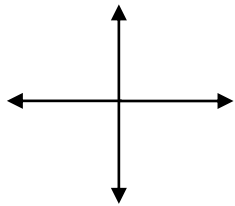
$\cos 225^\circ = \underline{\hspace{2cm}}$

$\tan 225^\circ = \underline{\hspace{2cm}}$

5. Solve the equation $\cos \theta = -\frac{1}{2}$, for $0^\circ \leq \theta < 360^\circ$.

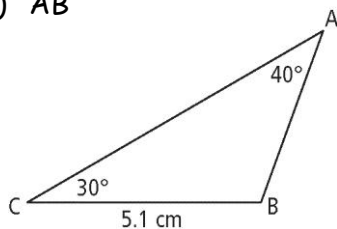


6. Suppose θ is an angle in standard position with terminal arm in quadrant II, and $\sin \theta = \frac{2}{7}$. Determine the exact values for $\cos \theta$ and $\tan \theta$.

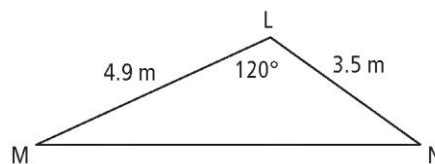


7. Determine the length of the indicated side or angle in each triangle. Round to the nearest tenth.

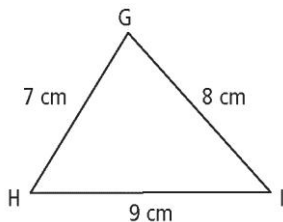
a) AB



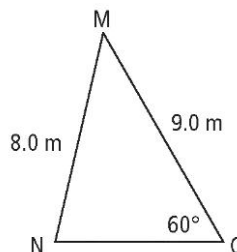
b) MN



c) $\angle G$



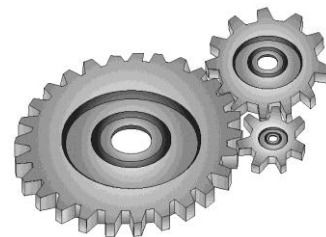
d) $\angle N$



8. A gear system inside a toy consists of three circular gears. The radii of the three gears are 4 cm, 2 cm, and 1 cm, respectively.

a) Sketch a triangle representing the distances between the centres of the gears.

b) What is the measure of the largest angle between the centres of the gears, to the nearest tenth of a degree?



Mathematics 20-1
Chapter 3: Quadratic Functions
Final Exam Review Assignment

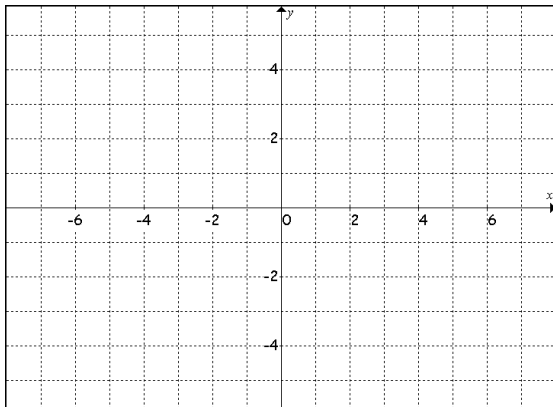
Name: _____

Date: _____

Vertex Form: $y = a(x - p)^2 + q$

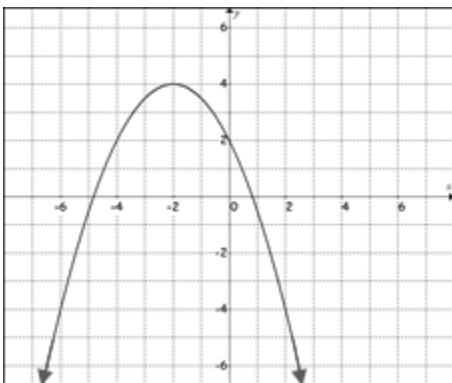
Standard Form: $y = ax^2 + bx + c$

1. Graph the function $y = 2x^2 - 8x + 5$ then identify the coordinates of its vertex, the equation of the axis of symmetry, direction of opening, maximum or minimum value, domain, range, y-intercept, and the x-intercepts. Round to the nearest tenth where rounding is necessary.



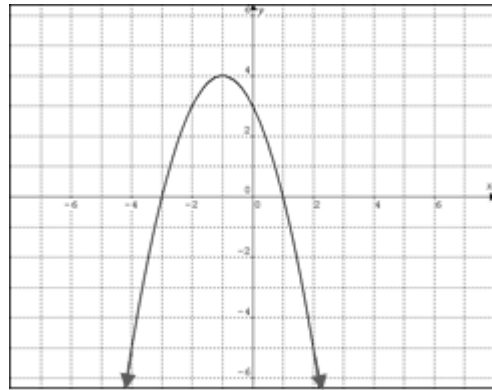
2. Determine a quadratic function in vertex form that has its vertex at $(7, 1)$ and passes through the point $(4, 2)$.

3. Determine a quadratic function in vertex form for the parabola graphed below.



4. For the graph, identify the following:

- the coordinates of the vertex
- the equation of the axis of symmetry
- the x-intercepts
- y-intercept
- the direction of opening
- the maximum or minimum value
- the domain and range



5. Write each function in vertex form by completing the square. Use your answer to identify the vertex of the function.

a) $y = x^2 + 10x + 21$

b) $y = 2x^2 - 12x + 11$

c) $y = -4x^2 + 8x + 1$

6. The parabolic path of an aircraft used to simulate weightlessness can be represented by the quadratic function $h = -10t^2 + 300t + 9750$, where 'h' is the altitude of the aircraft, in metres, and 't' is the time, in seconds, since weightlessness was achieved.

a) Rewrite the function in vertex form.

b) What is the maximum altitude reached by the aircraft and the number of seconds it takes to reach this maximum altitude?

Mathematics 20-1
Chapter 4: Quadratic Equations
Final Exam Review Assignment

Name: _____

Date: _____

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

1. Solve $0.5x^2 - 3x = 4$ by graphing. Round all solutions to the nearest tenth.

2. Determine the exact roots to the equation $2x^2 = 5x + 3$ using technology.

3. Factor each of the following completely.

a) $(x+3)^2 + 2(x+3) - 24$

b) $2(4x-1)^2 + 9(4x-1) + 10$

4. Solve each quadratic equation by factoring.

a) $2a^2 - 10a - 28 = 0$

b) $10b^2 + 13b = 3$

c) $16p^2 - 9 = 0$

d) $6x^2 + 4 = 11x$

5. Use the quadratic formula to solve each quadratic equation. Express answers as exact values in simplest form.

a) $3x^2 - 6x + 1 = 0$

b) $4x^2 = 3 - 10x$

6. Solve each of the following quadratic equations. Give solutions as exact values, in simplest form.

a) $16x^2 - 8x + 1 = 0$

b) $2x^2 + 1 = 6x$

Mathematics 20-1
Chapter 5: Radical Expressions and Equations
Final Exam Review Assignment

Name: _____

Date: _____

1. Convert each entire radical to a mixed radical in simplest form.

a) $\sqrt{200}$

b) $\sqrt{24x^3y^4z^5}$; $x, y, z \geq 0$

c) $3\sqrt{18}$

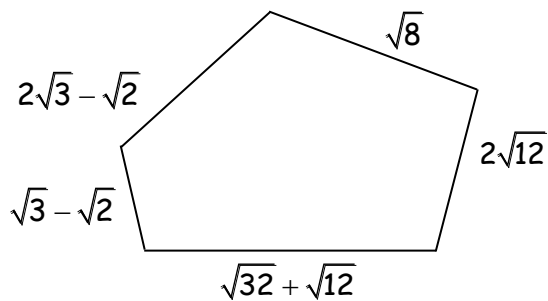
d) $-\frac{1}{5}\sqrt{125}$

2. Simplify radicals and combine like terms.

a) $\sqrt{32} + \sqrt{50}$

b) $18\sqrt{27} - 25\sqrt{75}$

3. Determine the perimeter in simplest mixed radical form.



4. Simplify. Express all products or quotients in simplest mixed radical form.

a) $2\sqrt{24} \times 5\sqrt{6}$

b) $2\sqrt{2}(3\sqrt{32} - 2\sqrt{50})$

c) $2(\sqrt{3} - 3\sqrt{2}) - 3(6\sqrt{3} - 2\sqrt{2})$

d) $\frac{\sqrt{48}}{\sqrt{3}}$

e) $\frac{24\sqrt{21}}{6\sqrt{3}}$

f) $\frac{3\sqrt{2}}{2\sqrt{3}}$

$$g) \frac{4}{2-\sqrt{3}}$$

$$h) \frac{\sqrt{2}}{\sqrt{12}-\sqrt{8}}$$

$$i) \frac{3\sqrt{5}-2\sqrt{3}}{3\sqrt{5}+2\sqrt{3}}$$

5. Algebraically solve the following radical equations.

$$a) \sqrt{2x-3} = 5$$

$$b) \sqrt{x+2} = x$$

$$c) \sqrt{x-3} + \sqrt{x} = 3$$

$$d) \sqrt{2x^2-7} = 3-x$$

Mathematics 20-1
Rational Expressions and Equations
Chapter 6 Final Exam Review Assignment

Name: _____

Date: _____

1. What are the non-permissible values of 'c' for the rational expression $\frac{c^2+10c+16}{c^2-c-72} \div \frac{6c^2+c-2}{3c^2-c-4}$?

2. Simplify the following rational expressions and determine the non-permissible values.

a) $\frac{2x^2(x-5)(x+4)}{6x(x-4)(x-5)}$

b) $\frac{4x^2 - 36}{2x^3 + 3x^2 - 9x}$

c) $\frac{2a^2 - 9a - 5}{a^2 + a - 12} \times \frac{a^2 + 2a - 15}{2a^2 + 3a + 1}$

d) $\frac{4x^2 - 25}{6x^2 + 21x + 15} \div \frac{2x^2 - 19x + 35}{6x^2 + 30x + 24}$

3. The reciprocal of 4 plus 1 is the reciprocal of what number?

4. Algebraically solve the following equations.

$$\text{a) } \frac{3}{x+2} - \frac{1}{x} = \frac{1}{5x}$$

$$\text{b) } \frac{x}{x-2} + \frac{1}{x-4} = \frac{2}{x^2-6x+8}$$

5. Simplify.

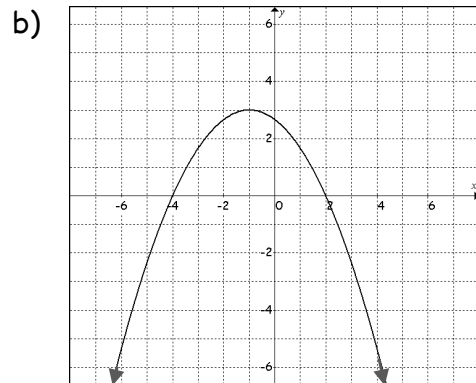
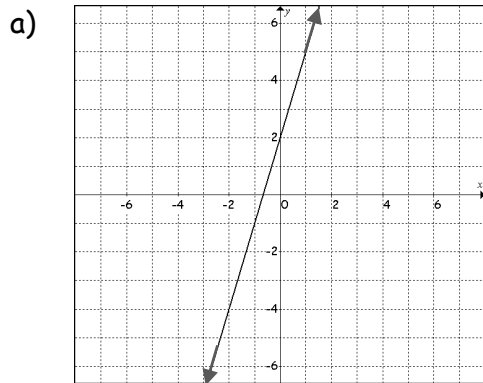
$$\text{a) } \frac{5x^4 + 2x^3 - 8x}{2x^2} + \frac{3x^5 + x^2 - 2}{5x^3}$$

$$\text{b) } \frac{(x+1)}{(x-2)(x+5)} - \frac{2(x+4)}{(x-2)(x-1)}$$

$$\text{c) } \frac{y+3}{y-1} - \frac{y-5}{y^2+4y-5}$$

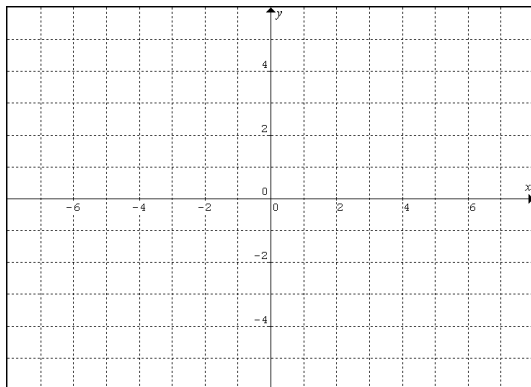
Final Exam Review Assignment

1. Given the graph of $y = f(x)$, sketch the graph of $y = |f(x)|$.

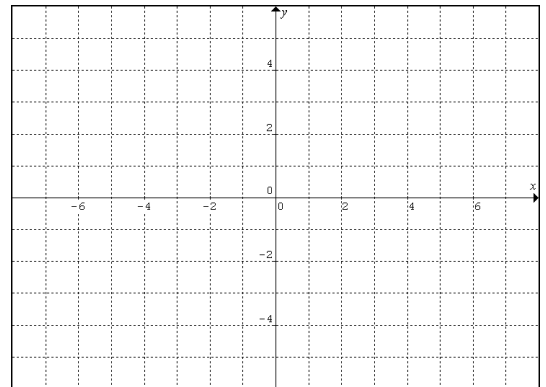


2. Consider the functions $y = |-x + 2|$ and $y = |x^2 - x - 6|$.

a) Sketch the graph of $y = |-x + 2|$ below.



b) Sketch the graph of $y = |x^2 - x - 6|$ below.



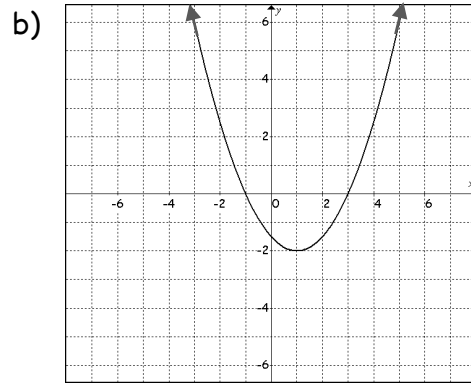
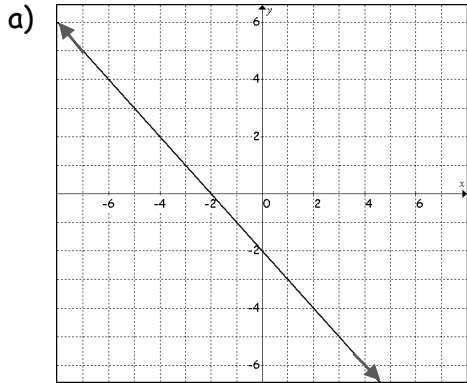
c) Express each function above as a piecewise function.

3. Solve each of the following equations.

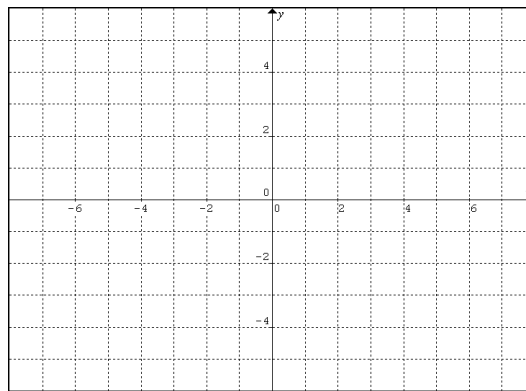
a) $|4x - 7| = 6x + 3$

b) $|x^2 - 10x| = 24$

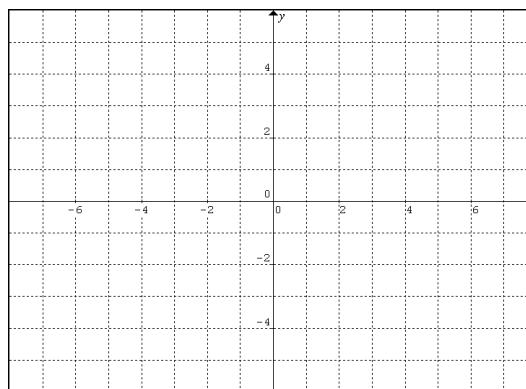
4. Given the graph of $y=f(x)$ below, sketch the graph of $y=\frac{1}{f(x)}$.



5. Graph the function $f(x)=x+3$ below then graph the reciprocal function $y=\frac{1}{f(x)}$ on the same set of axes. State the equation(s) of the vertical asymptote(s). How many invariant points are there?



6. Graph the function $f(x)=x^2+x-2$ below then graph the reciprocal function $y=\frac{1}{f(x)}$ on the same set of axes. State the equation(s) of the vertical asymptote(s). How many invariant points are there?



Mathematics 20-1
Chapter 8: Systems of Equations
Final Exam Review Assignment

Name: _____

Date: _____

1. Solve the following systems of equations graphically.

a) $y = x^2 - x - 6$
 $y = 2x - 2$

b) $4x^2 + 8x + 5 - y = 1$
 $3x^2 - x + 3 = y + x + 8$

2. A model rocket is launched from a field. The height of the rocket, y , in feet above the ground, after x second is modeled by the equation $y = -16x^2 + 177x + 4$. From the 10th floor of a nearby building, a boy looks out a window when he hears the rocket fired. The boy's line of sight is given by the equation $y = 65x + 100$. **Determine and interpret** the point(s) of intersection.

3. Solve the following systems of linear-quadratic or quadratic-quadratic equations algebraically.

a) $3x - y = -5$
 $x^2 - y + 2x = 1$

b) $4x^2 - y + 8x = -2$
 $y + 2 = 4x^2 - 8x$

4. Determine the value of the integers given the following information. The square of the first number subtract the second number is equal to 5. The first number is equal to the second number subtract 7. Create a system of equations and then solve the system to determine the numbers.

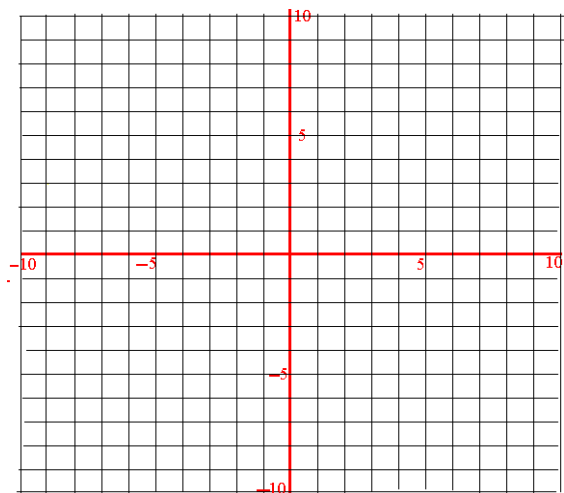
Mathematics 20-1
 Chapter 9: Linear and Quadratic Inequalities
 Final Exam Review Assignment

Name: _____

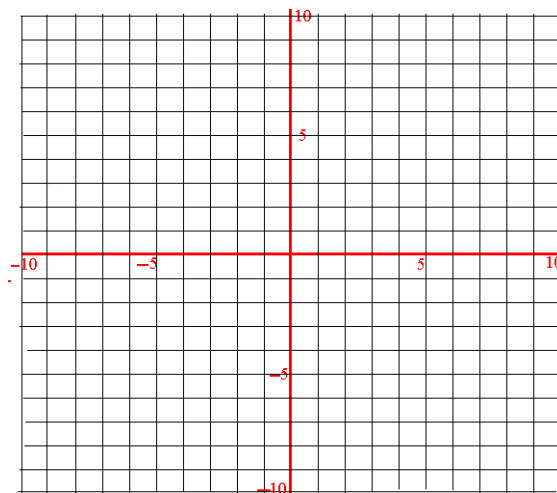
Date: _____

1. Graph each inequality.

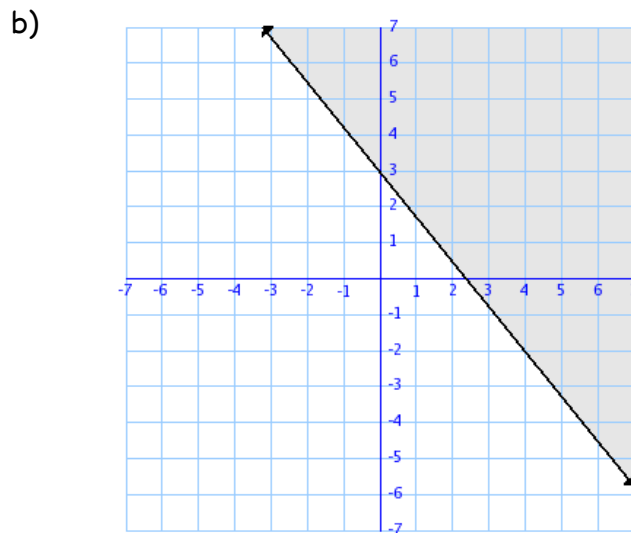
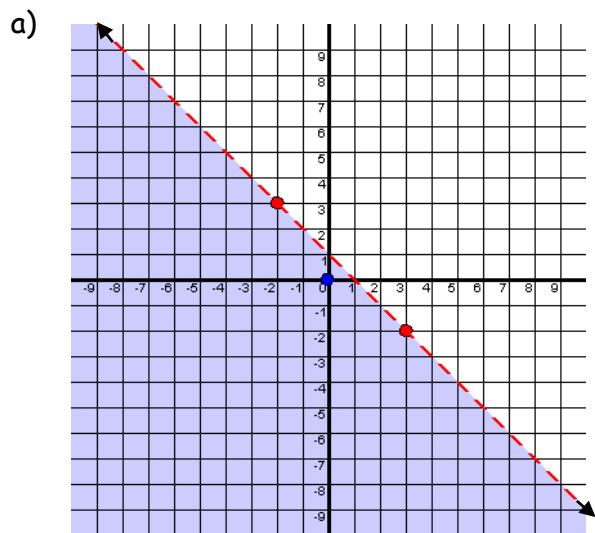
a) $2x - 3y \geq 12$



b) $-5x - y > 0$

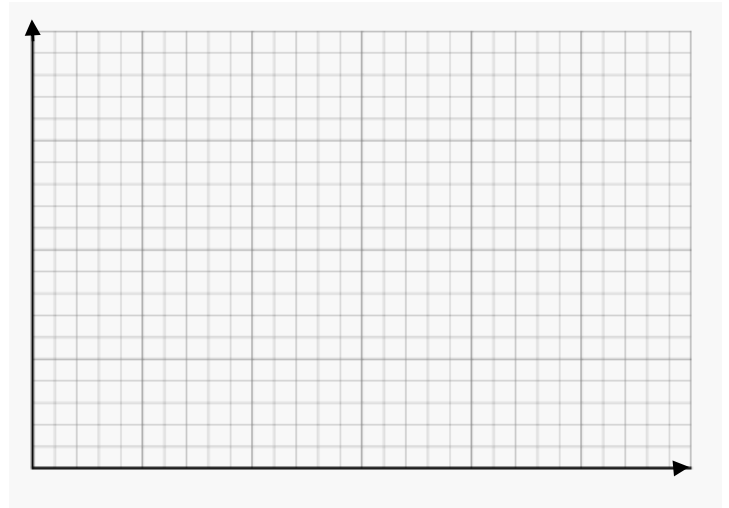


2. Determine the inequality that best describes each graph.

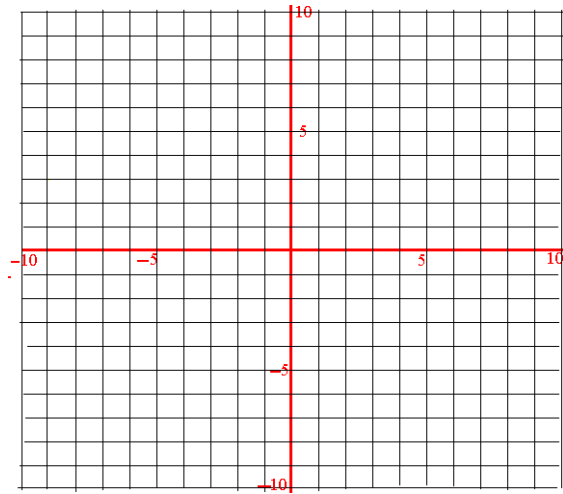


3. Algebraically solve $2x^2 + 9x - 5 \leq 0$.

4. Amber is working to earn money for a down payment on a car. She wants to save at least \$1000. Amber makes \$15/hour at a part-time job and \$10/hour babysitting. Draw a graph to show some of the possible ways she can work to earn money. Choose one possible solution and state what it means.

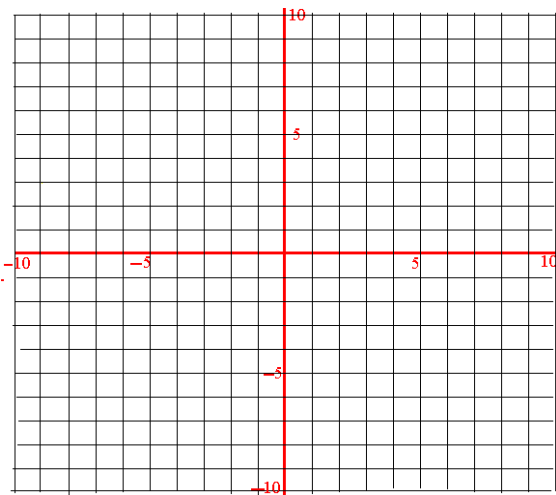


5. Solve $-2x^2 + 3x > -7$ graphically



6. Graph each quadratic inequality.

a) $y < -3x^2 - 3x + 1$



b) $y \leq 0.5x^2 + 4x - 1$

