

Name: _____

Show all work for full marks. All answers should be written as **exact simplified** values.

1. **Algebraically determine** the solution(s) to the system of equations below using **substitution**. All solutions should be written as exact simplified values. **(2 marks)**

$$\begin{aligned}x^2 - 3x - y &= 7 \\4x + y &= 5\end{aligned}$$

2. **Algebraically determine** the solution(s) to the system of equations below using **elimination**. All solutions should be written as exact simplified values. **(3 marks)**

$$\begin{aligned}x^2 + 2x + 2y - 6 &= 0 \\2x - y + 2 &= 0\end{aligned}$$

Name: _____

3. **Algebraically determine** the solution(s) to the system of equations below. All solutions should be written as exact simplified values. **Verify** the solution(s). **(3 marks)**

$$-x^2 + 30x - y - 5 = 0$$

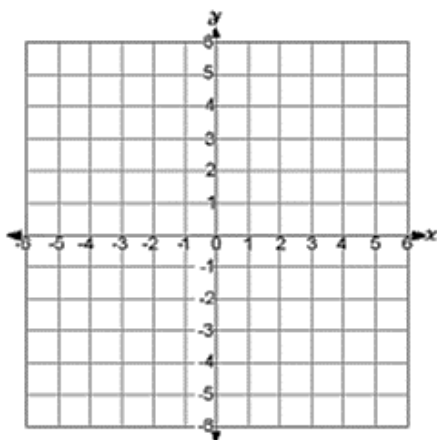
$$12x^2 + 17x - y - 5 = 0$$

4. **Algebraically determine** two integers such that: **(3 marks)**
- twice the square of the smaller integer decreased by 17 results in 5 times the larger integer.
 - three times the smaller integer decreased by 7 yields the larger integer.

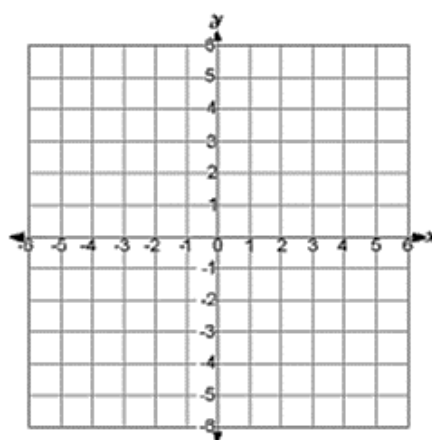
Name: _____

5. Graph the following inequalities. Use a test point to determine each solution region.

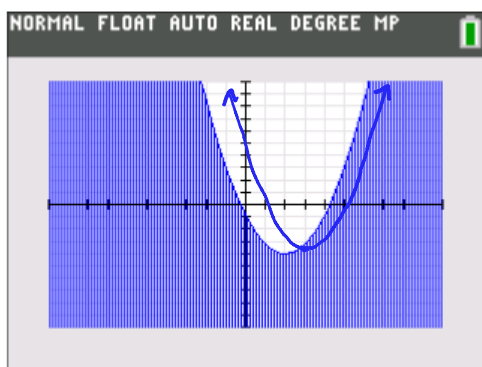
a. $5x + 2y < 10$ (2 marks)



b. $y \geq -(x - 2)^2 + 4$ (2 marks)

*Use the following information to answer the question below.*

A student graphed an inequality using technology.
She observed that the minimum was at $(2, -4)$.



NORMAL FLOAT AUTO REAL DEGREE MP				
PRESS + FOR Δ b1				
X	Y1			
-1	3			
0	-.8889			
1	-3.222			
2	-4			
3	-3.222			
4	-.8889			
5	3			
6	8.4444			
7	15.444			
8	24			
9	34.111			
X = -1				

6. Write an inequality to represent the information above. Show your work. (2 marks)

Name: _____

7. The volume of the box shown below can be calculated using the formula $V = l \times w \times h$. State the inequality and **algebraically determine** the solution set for the possible values for x where the volume must be **at most** 72 m^3 . (3 marks)

