

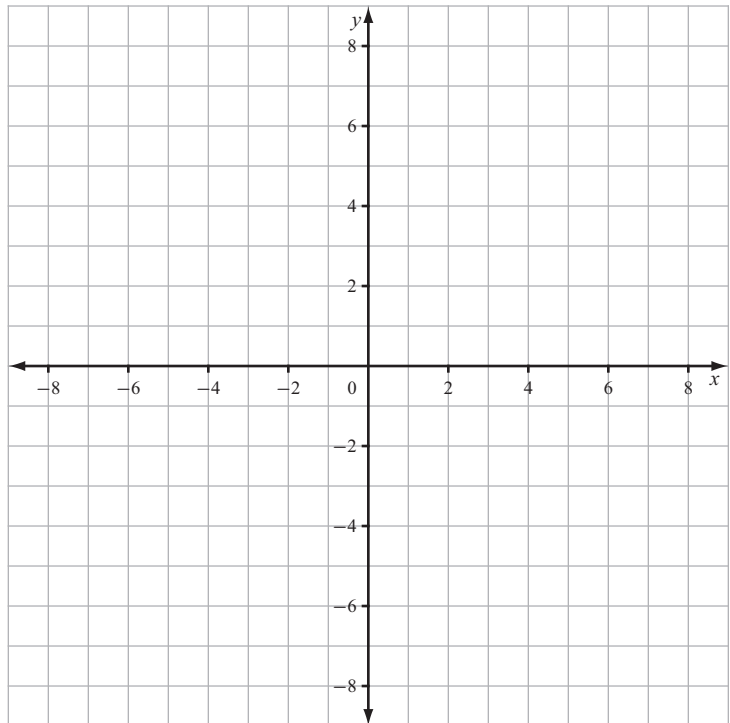
Pre-Calculus 11

Final Exam Written Response

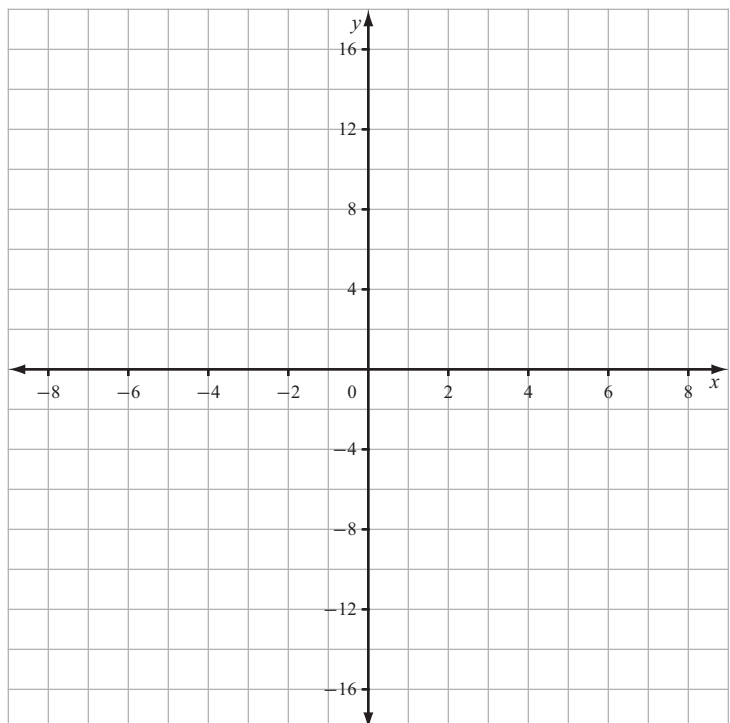
Write your response in the space provided. Present your response in a well-organized way, using complete sentences and correct units.

1. Solve each system of equations by graphing. In each case, show the points of intersection and explain in words what they represent.

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



b) $y + 2x^2 - 12x = -8$
 $y - 2x^2 + 16x = 32$



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2. Solve each system of equations algebraically. Verify your solutions and explain in words what the points of intersection represent.

a) $-2x^2 - 3x - y = -17$
 $y = -5x + 13$

b) $2x^2 - y - 2x = -3$
 $-y + x^2 + 5x = 7$

3. Two numbers have a sum of 30.

a) Use inequalities to determine possible values for the numbers if their product is at least 150.

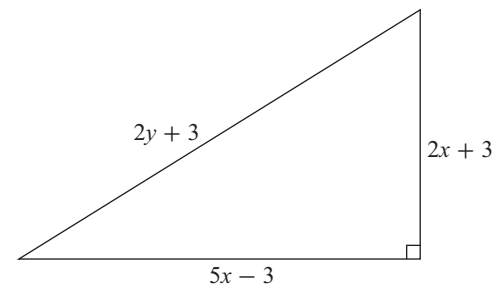
b) Use this problem to describe the differences between an inequality and an equation.



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Use this information to answer #4.

The perimeter of the triangle is 36 cm. The area of the triangle is $9y \text{ cm}^2$.



4. a) Write a simplified expression for the triangle's perimeter in terms of x and y .

b) Write a simplified expression for the triangle's area in terms of x and y .

c) Write a system of equations and explain how it relates to this problem.

d) Solve the system for x and y . What are the dimensions of the triangle?



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5. In order to get the most revenue from an outdoor concert, the promoters need to have as many concert goers as possible at a price per person that is reasonable. If the price of a ticket is \$10, 400 people will attend. Research has shown that for every \$1 increase in the price of a ticket, 20 fewer people will attend. The relationship between the number of price increases and the revenue is given by $y \leq (400 - 20x)(10 + x)$, where x is the number of \$1 price increases and y is total revenue, in dollars.

a) Graph the quadratic inequality.



b) What increase in ticket price will generate revenue of at least \$3000?

c) How many concert goers are needed to generate revenue of at least \$3000?



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6. Describe how the graph of a function and the graph of the inverse of the function are

a) similar

b) different

c) interconnected

7. Describe how to sketch, without technology, the graph of $y = \frac{1}{x}$ if given $f(x)$.

8. Describe how to sketch, without technology, the graph of $f(x)$ if given $\frac{1}{f(x)}$.

