

3.7 Quadratic Inequalities • Form A

Example 1

Graph each inequality on the attached graph paper.

- | | | |
|------------------------|-----------------------|--------------------------|
| 1. $y < -x^2 + 4x - 6$ | 2. $y \leq x^2 + 4$ | 3. $-x^2 + 12x - 36 > y$ |
| 4. $y > x^2 - 8x + 17$ | 5. $y \geq 2x^2 + 4x$ | 6. $y \geq x^2 - 4x + 4$ |

Examples 3 and 4

Solve each inequality by graphing.

- | | | |
|----------------------------|-------------------------|---------------------------|
| 7. $-x^2 - 4x + 32 \geq 0$ | 8. $x^2 - x - 6 \leq 0$ | 9. $x^2 - 2x - 24 \leq 0$ |
|----------------------------|-------------------------|---------------------------|

Example 5

10. **BUSINESS** A bicycle maker sold 300 bicycles last year at a profit of \$300 each. The maker wants to increase the profit margin this year, but predicts that each \$20 increase in profit will reduce the number of bicycles sold by 10. How many \$20 increases in profit can the maker add in and expect to make a total profit of at least \$100,000?

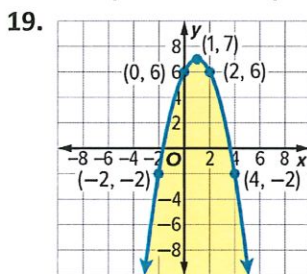
Mixed Exercises

Solve each quadratic inequality by using a graph.

- | | | |
|---------------------------|------------------------|-------------------------|
| 11. $5x^2 + x + 3 \geq 0$ | 12. $x^2 - 4x \leq -7$ | 13. $-1 \geq -x^2 - 5x$ |
| 14. $x^2 - 3x + 2 \leq 0$ | 15. $x^2 - 5x > 14$ | 16. $9x \leq 12x^2$ |
| 17. $5x^2 + 10 \geq 27x$ | | |

18. **REASONING** Consider the equation $ax^2 + bx + c = 0$. Assume that the discriminant is zero and that a is positive. What are the solutions of the inequality $ax^2 + bx + c \leq 0$?

Write a quadratic inequality for each graph.

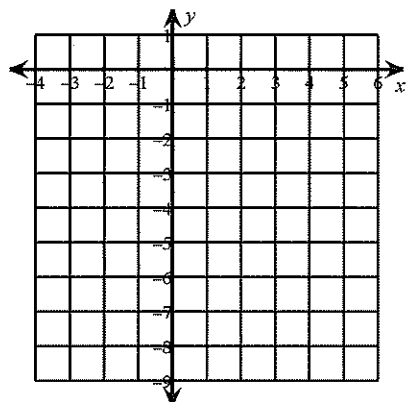


20. **BASEBALL** A baseball player hits a high pop-up with an initial velocity of 32 meters per second, 1.3 meters above the ground. The height $h(t)$ of the ball in meters t seconds after being hit is modeled by $h(t) = -4.9t^2 + 32t + 1.3$.
- During what time interval is the ball higher than the camera located in the press box 43.4 meters above the ground?
 - When is the ball within 2.4 meters of the ground where the catcher can attempt to catch it?

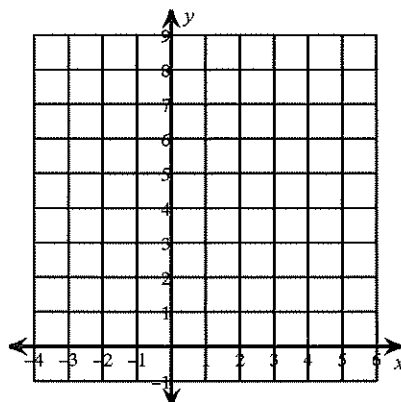
3.7 Quadratic Inequalities Form A - graphs

Name _____

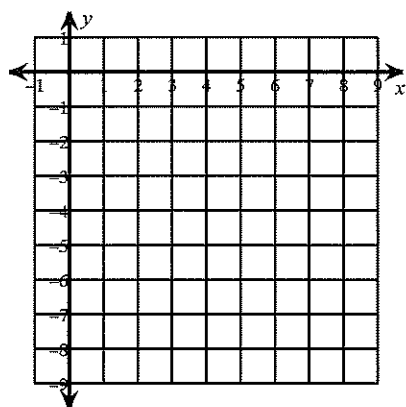
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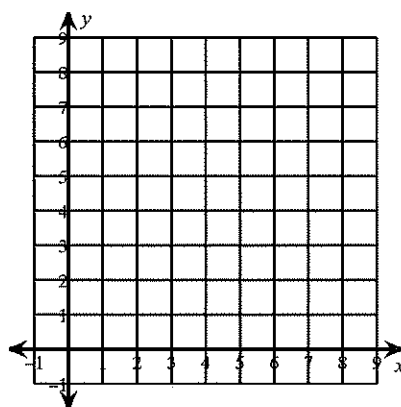
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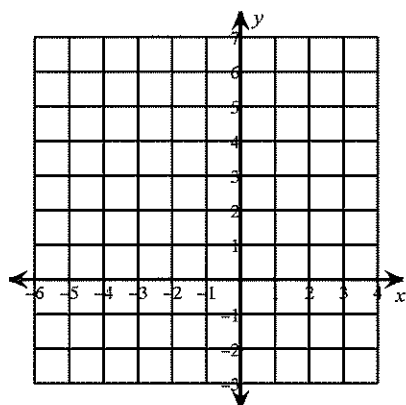
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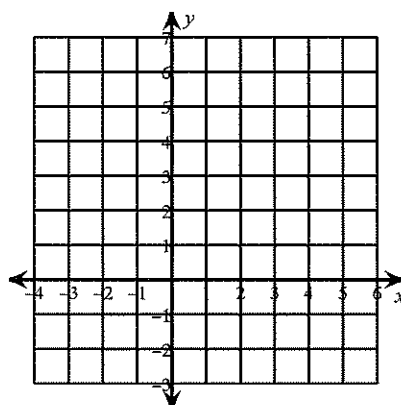
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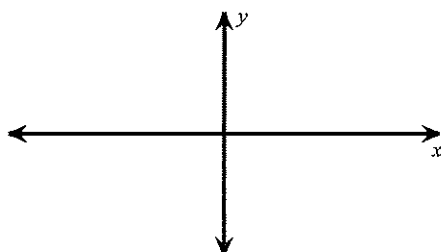
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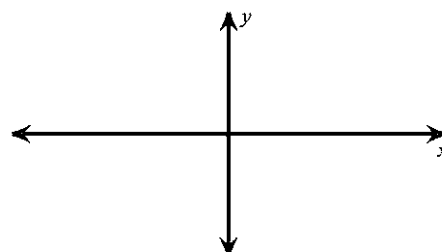
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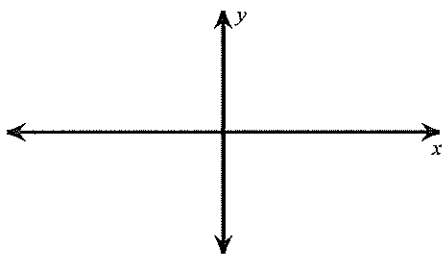
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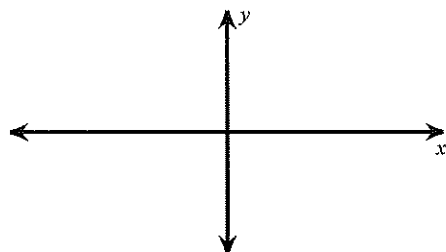
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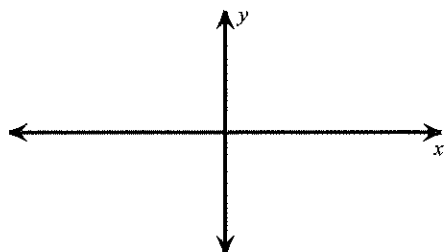
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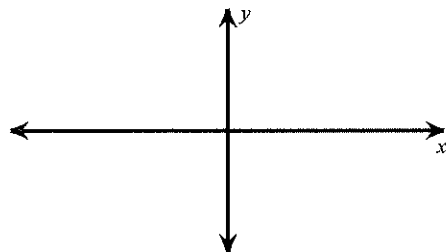
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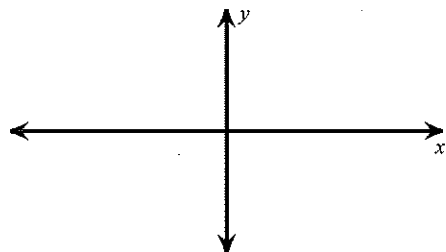
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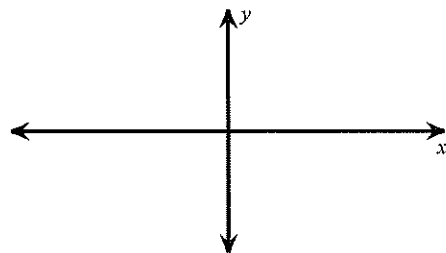
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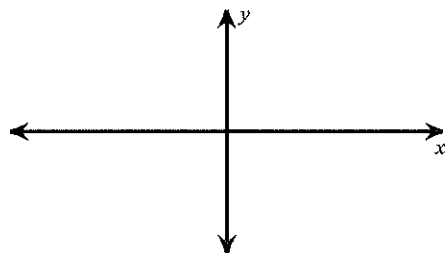
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14)



15)



16)



17)

