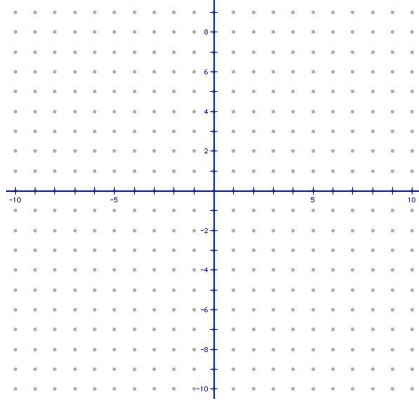
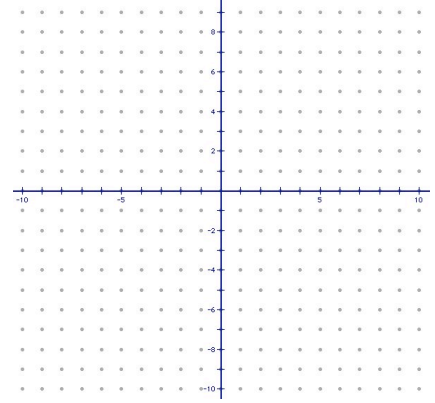


Level 1: Graph the equation and identify the VERTEX, AXIS of SYMMETRY, and Y-INTERCEPT.

1. $y = x^2 - 4x + 5$

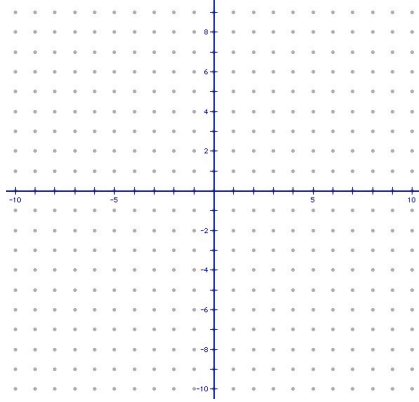


2. $y = (x + 3)^2 - 7$

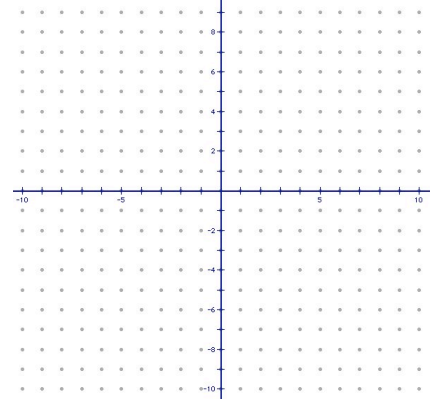


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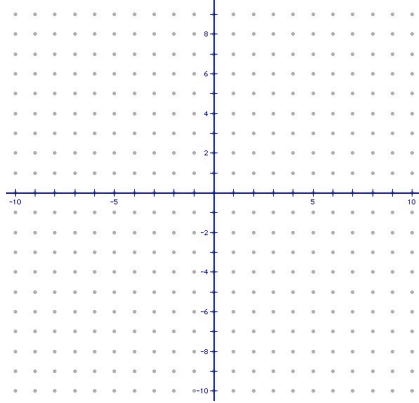


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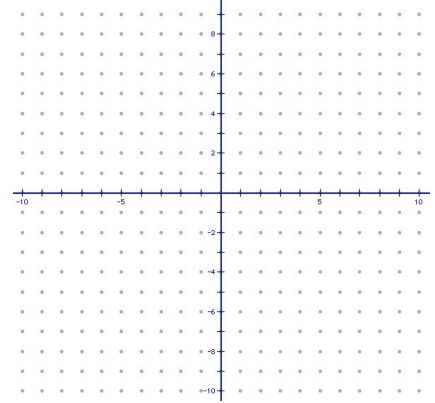


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Level 2: Solve the equation using any method.

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Level 3: Answer the question.

1. A softball is thrown into the air. The height h of the ball, in feet, can be written as a function of time t , in seconds, as $h = -16t^2 + 40t + 5$.

- (a) At what time does the ball reach its maximum height? (No decimal)
- (b) What is the maximum height the ball reaches?
- (c) When is the ball 9 feet above the ground? (Exact answer and Approx answer)
- (d) When does the ball hit the ground? (Exact answer and Approx answer)

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Level 4: Simplify the complex number and write in standard form.

1. $(3 - 7i) + (-2 + i)$

2. $(-1 - 6i)(4 + 5i)$

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Level 5: Factor Completely

1. $16x^2 - 9$

2. $4x^2 - 8x + 4$

3. $x^2 + 3x - 28$

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Level 6: Answer the question.

1. An archer's arrow follows a parabolic path. The path of the arrow can be described by the equation $y = -0.005x^2 + 2x + 5$, with x representing the horizontal distance the arrow travels and y representing the vertical distance the arrow travels.

- a) Find the y-intercept. What does this value mean in the problem?
- b) What is the highest distance that the arrow travels?
- c) At what horizontal distance the arrow hit the ground?
- d) if you wanted to hit a the center of a bulls eye 4.5 feet in the air, at what horizontal distance would you place the target?

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