1. Several quadratic functions are given below, along with their graphs. For each graph, find the x-intercepts and locate the vertex. What relationship do you see between its *x*-intercepts and the *x*-coordinate of its vertex? (Note: The vertex is the highest or lowest point on the graph.) 









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2. The quadratic function below has *x*-intercepts at *x* = 0 and $x=-\frac{b}{a}$. What is the *x*-coordinate of its vertex?

 

3. Challenge: Using what you learned from the previous problems, and what you know about the quadratic formula, what is the *x*-coordinate of the vertex of the quadratic below?