Graphing Quadratic Functions

1) Identify the values of a, b, and c for the quadratic function in standard form \( y = -5x^2 + 7x - 4 \)

2) Why is the vertical line that passes through the vertex of a parabola call the axis of symmetry?

3) Explain how you can decide whether the graph of \( y = 3x^2 + 2x - 4 \) open up or down.

Tell whether the graph opens up or down. Write an equation of the axis of symmetry.

4) \( y = 2x^2 - 12x + 14 \)  
5) \( y = 2x^2 + 16x + 29 \)

6) \( y = -3x^2 + 24x - 49 \)  
7) \( y = -x^2 + 4x - 7 \)

Find the coordinates of the vertex and tell whether it has a maximum or minimum.

8) \( y = x^2 - 4x + 7 \)  
9) \( y = -2x^2 - 16x - 30 \)

10) Which of the following quadratic function has a maximum value of 25?
   A) \( y = x^2 + 10x + 25 \)  
   B) \( y = -x^2 + 25 \)  
   C) \( y = x^2 - 10x + 25 \)  
   D) \( y = x^2 + 25 \)

11) You throw a basketball whose path can be modeled by \( y = -16x^2 + 15x + 6 \), where \( x \) represents time and \( y \) represents height of the basketball. What is the maximum height that the basketball reaches? (It will be a decimal)
Sketch the graph of each function. Draw and label the vertex and axis of symmetry.

12) \( y = 2x^2 + 12x + 22 \)

13) \( y = 2x^2 + 16x + 28 \)

14) \( y = -2x^2 - 8x - 5 \)

15) \( y = x^2 + 4x \)

16) \( y = -x^2 + 6x - 13 \)

17) \( y = -2x^2 + 16x - 35 \)