

## Math-8 Practice Exam #3

- 1). Identify each of the following formulas. Be very specific. Differentiate between general and standard forms and call out important points (like the center of a circle).

$$x^2 + y^2 + Dx + Ey + F = 0$$

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$$(x - h)^2 + (y - k)^2 = r^2$$

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$$\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

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$$d = [(x_1 - x_2)^2 + (y_1 - y_2)^2]^{1/2}$$

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$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

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$$y - y_1 = m(x - x_1)$$

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$$y = mx + b$$

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$$m_1 = m_2$$

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$$m_1 m_2 = -1$$

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2). Consider the following equation of a circle:

$$(x + 1)^2 + (y - 5)^2 = 16$$

What are the coordinates of the center and the length of the radius?

3). Consider the following equation of a circle:

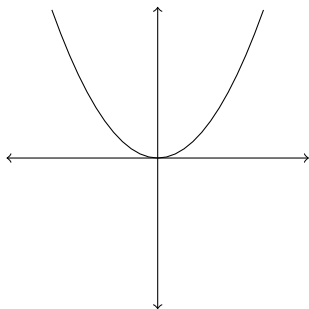
$$x^2 + y^2 - 6x = 0$$

Convert the equation to standard form and determine the center and radius.

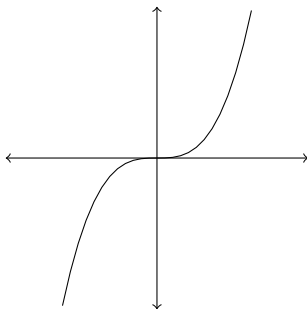
4). What is the equation of the line between the two points, in slope-intercept form?

- 5). What is the equation, in slope-intercept form, of the line that passes through the midpoint of the two centers and is perpendicular to the line joining the two centers?

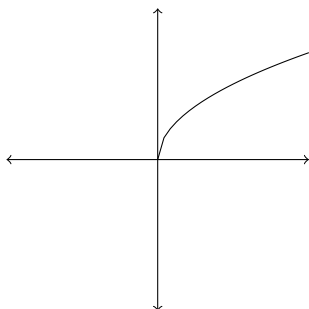
6). Identify each of the following standard functions:



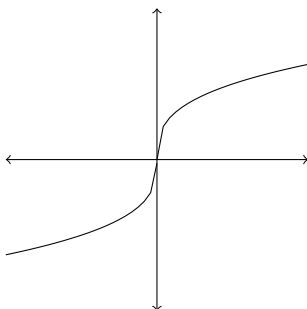
$y =$



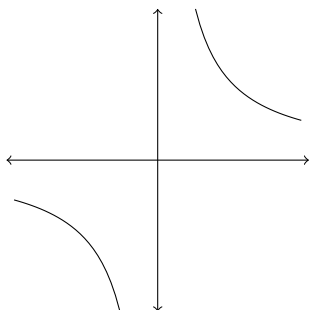
$y =$



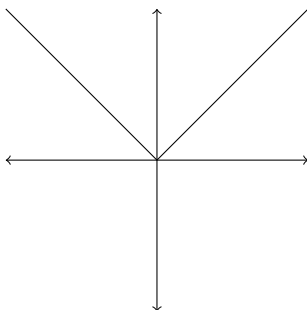
$y =$



$y =$



$y =$



$y =$

7). Consider the function:

$$f(x) = -|x - 2| + 1$$

Identify the initial standard function and then the three transformations in the order that they should be applied.

a).

b).

c).

d).

8). For the function in (7):

a). Determine the x-intercept(s) (if any).

b). Determine the y-intercept(s) (if any).

c). Sketch the graph. Be sure to label all key points for full credit!

9). Based on your graph in (8):

a). Where is the function increasing, if anywhere (in interval notation)?

b). Where is the function decreasing, if anywhere (in interval notation)?

c). Identify any minima.

d). Identify any maxima.

10). Based on your graph in (8):

a). State the domain, in interval notation.

b). State the range, in interval notation.