

## Math 111 Quiz #2 Answers

1. Need: Slope and a Point

For the slope, note that the line given is  $2y = 4x + 10 \Rightarrow y = 2x + 5$ .

The slope of this line is 2, so the slope of the line we are looking for is  $m = -\frac{1}{2}$ .

To find a point, we know that these two lines intersect at  $x = 3$ , so the point that is indicated has an  $x$ -value of 3, with an unknown  $y$ -value.  $\Rightarrow (3, ?)$

Since the point is on the line  $y = 2x + 5$ , we know that the  $y$ -value is  $2(3) + 5 = 11$ .

Using the slope  $m = -\frac{1}{2}$  and the point  $(3, 11)$ , we have the equation

$$\boxed{y - 11 = -\frac{1}{2}(x - 3) \quad \text{OR} \quad y = -\frac{1}{2}x + 12.5}$$

2. (a)  $f(-2) = \sqrt{25 - (-2)^2} = \sqrt{25 - 4} = \boxed{\sqrt{21}}$

(b) Solve  $\sqrt{25 - x^2} = 3 \Rightarrow 25 - x^2 = 9 \Rightarrow x^2 = 16 \Rightarrow \boxed{x = \pm 4}$

3. To avoid division by zero and a square root of a negative number, we must have that  $x - 7 > 0 \Rightarrow x > 7$ .

So the domain is  $\boxed{x > 7 \text{ or } (7, \infty)}$ .

4. If you make a sketch of this (or picture the graph in your head), you will see that this is a line segment whose graph increases from the point  $(-1, -7)$  to the point  $(2, 8)$ .

So, the range is  $\boxed{-7 \leq y \leq 8 \text{ or } [-7, 8]}$ .