

Quiz 3

Name: Key

Math 115, Fall 2016

Thursday Discussion Time: _____

Directions: You have 20 minutes to complete this quiz. Read each problem carefully. There are three problems on the reverse side. No calculators are allowed.

1. (3 points)

- (a) Find the slope-intercept form, $y = mx + b$, of the line that passes through the points $(2, -1)$ and $(1, 4)$.

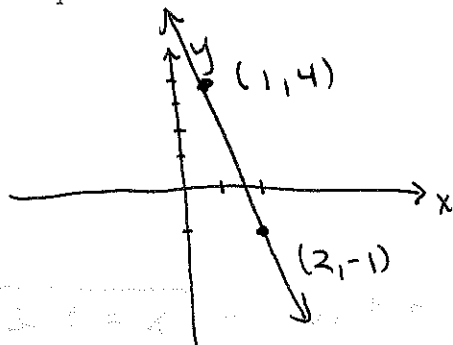
$$m = \frac{4 - (-1)}{1 - 2} = \frac{5}{-1} = -5 ; y = -5x + b ; \text{ plug in } (2, -1):$$

$$-1 = -5(2) + b \Rightarrow b = 9 \Rightarrow \boxed{y = -5x + 9}$$

- (b) What is the y -intercept of this line?

$$\boxed{(0, 9)}$$

- (c) Graph this line.



2. (1 point) Find the distance between the points $(6, 4)$ and $(-8, 11)$.

$$d = \sqrt{(6 - (-8))^2 + (4 - 11)^2} = \sqrt{14^2 + 49} = \boxed{\sqrt{245}}$$

3. (2 points) Write the standard form of the circle with radius $r = \sqrt{3}$ and center $(-2, 1)$.

$$(x - (-2))^2 + (y - 1)^2 = (\sqrt{3})^2$$

$$\text{or } (x + 2)^2 + (y - 1)^2 = 3.$$

4. (2 points) Let $f(t) = \frac{t^2 - 1}{t + 3}$.

(a) Evaluate $f(-1)$.

$$f(-1) = \frac{(-1)^2 - 1}{-1 + 3} = \frac{0}{2} = 0.$$

(b) Evaluate $f(x^2)$; simplify your answer as much as possible.

$$f(x^2) = \frac{(x^2)^2 - 1}{x^2 + 3} = \boxed{\frac{x^4 - 1}{x^2 + 3}}$$

5. (2 points) Find the domain of the function $f(x) = \frac{1}{x^2 - 4}$.

$$x^2 - 4 \neq 0 \Rightarrow x^2 \neq 4 \Rightarrow x \neq \pm \sqrt{4} \Rightarrow \boxed{x \neq \pm 2}$$

or in interval notation:

$$\boxed{(-\infty, -2) \cup (-2, 2) \cup (2, \infty)}$$