

Calculus I

Name: _____

Study Guide 1

Class: _____

Due Date: _____

Score: _____

No Work \Leftrightarrow No Points

Use Pencil Only \Leftrightarrow Be Neat & Organized

1. Consider the function $f(x) = \frac{x}{|x|}$:

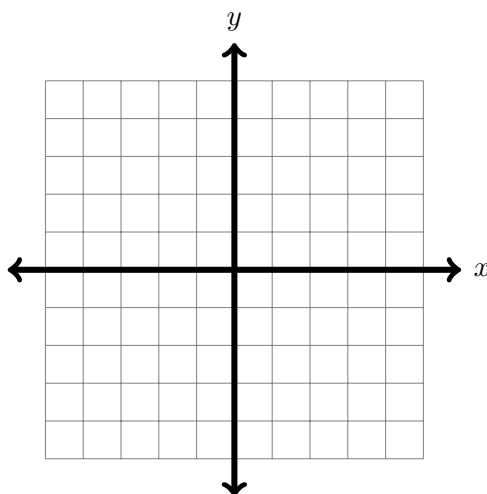
(a) (2 points) Express its domain using interval notation.

(a) _____

(b) (2 points) Rewrite this function using piece-wise notation.

(b) _____

(c) (3 points) Graph $f(x)$.



2. (2 points) True or False: All lines represent a function.

2. _____

3. (4 points) Find an equation of all points in simplest form that are 5 units from a fixed point $(3, -4)$.

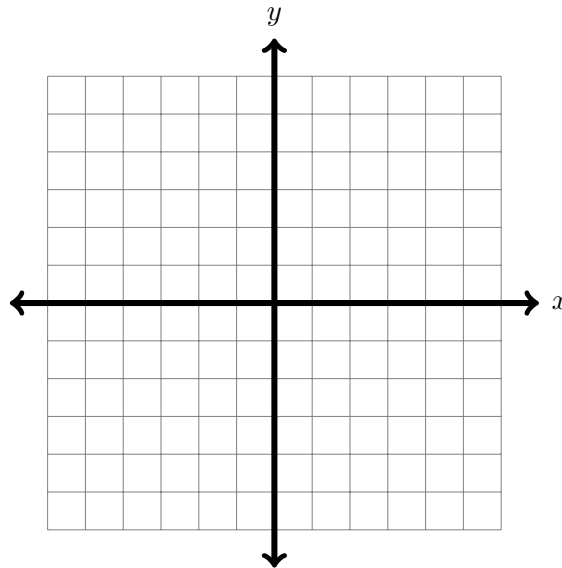
3. _____

4. Consider the function $f(x) = \frac{x^3 - x^2}{x - 1}$:

(a) (2 points) Express its domain using interval notation.

(a) _____

(b) (2 points) Graph $f(x)$.



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5. Consider the function $f(x) = \sqrt{25 - x^2}$:

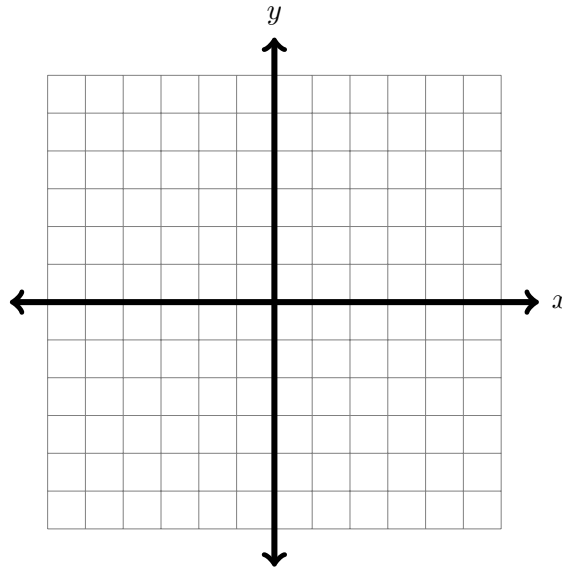
(a) (3 points) Express its domain using interval notation.

(a) _____

(b) (4 points) Rewrite this equation by removing the radical.

(b) _____

(c) (4 points) Graph $f(x)$.



(d) (3 points) Express its range using interval notation.

(d) _____

6. Given $f(x) = \frac{x}{1+x^2}$, and $g(x) = \frac{1}{x}$:

(a) (3 points) Find $(f \bullet g)(x)$.

(a) _____

(b) (3 points) Find $(f - g)(x)$.

(b) _____

7. (5 points) Find and simplify the difference quotient for $f(x) = \frac{1}{x}$, and then evaluate for $h = 0$.

7. _____

8. (3 points) Simplify: $(\sin x + \cos x)^2 - \sin 2x$

8. _____

9. (5 points) Graph: $|x| + |y| = 5$

