Calculus I	**Name:** _____
Study Guide 1	**Class:** _____
Due Date: _____	**Score:** _____

No Work ⇔ No Points

Use Pencil Only ⇔ Be Neat & Organized

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

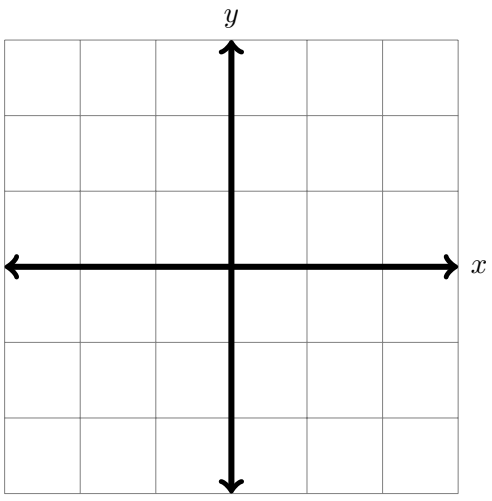
   (a) (2 points) Express its domain using interval notation.

   (a) _____

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

   (b) _____

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



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

2. _____

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3. (3 points) Find the equation of a circle in standard form with radius 5 and center $(3, -4)$.

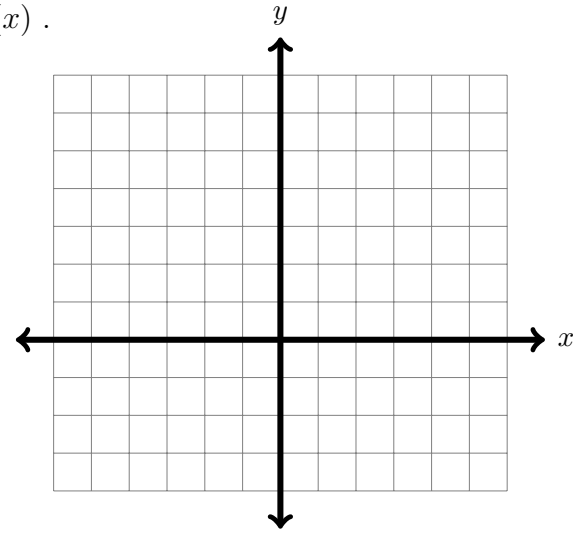
3. _____

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

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

(a) _____

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



(c) (2 points) Express its range using interval notation.

(c) _____

5. (2 points) Simplify $\dfrac{\dfrac{1}{x} - 1}{x - 1}$.

5. _____

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

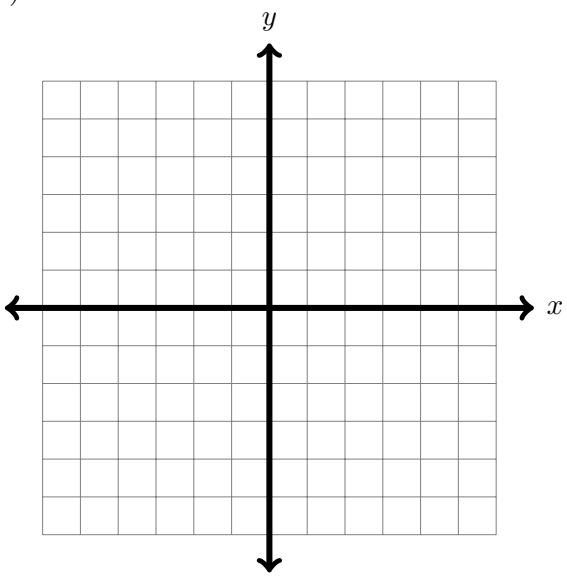
(a) (3 points) Express its domain using interval notation.

(a) _____

(b) (3 points) Rewrite this equation in the form of a polynomial equation using x and y.

(b) _____

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



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

(d) _____

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7. (3 points) Solve $2x^2 - 3x = 5$ by using the quadratic formula.

7. _____

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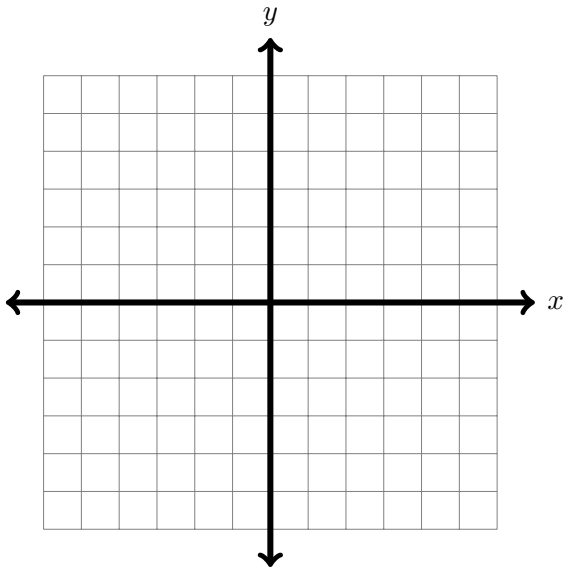
8. (5 points) Simplify $\dfrac{f(x+h)-f(x)}{h}$ for $f(x)=\dfrac{1}{x}$, and then evaluate it for $h=0$.

8. _____

9. (3 points) Simplify: $(\sin x+\cos x)^2-\sin 2x$

9. _____

10. (6 points) Find the area enclosed by the graph of $|x|+|y|=6$.



10. _____