

Math 165/166

Lab 8, March 10

3.2 Functions & 3.3 Graphs

Name:

Box Number:

1. Graph the functions defined by the given rules.

$$(a) f(x) = \begin{cases} x^2 & \text{if } -3 \leq x \leq 0 \\ \sqrt{x} & \text{if } x > 0 \end{cases}$$

$$(b) f(x) = \begin{cases} 1 & \text{if } x \leq 0 \\ 1/x & \text{if } x > 0 \end{cases}$$

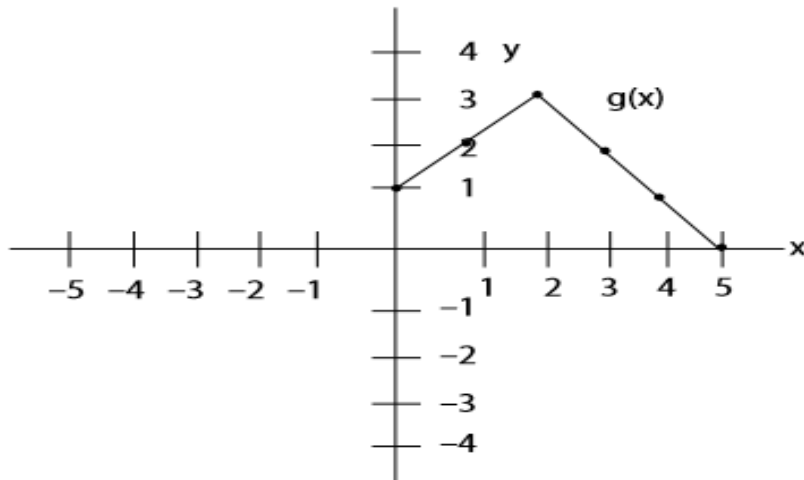
2. Let $f(x) = \frac{1}{x}$. Then find the Difference Quotient $\frac{f(x+h) - f(x)}{h}$. Simplify your answer as much as possible.

3. Let $f(x) = \frac{x+1}{x-1}$.

(a) Find the domain of the function $f(x)$.

(b) Find $f\left(\frac{1}{2}\right)$.

4. For the function given below for $y = g(x)$, answer the following.



(a) Find the interval where the function $y = g(x)$ is increasing.

(b) Find the domain and the range.

(c) Find the x-value(s) whose image is 2.

(d) Sketch the graph of $h(x) = 1 - g(x + 2)$.

Label each graph obtained and state the transformation performed in order.