

# Math-1003b Practice Exam #1

- 1). Match the following nine functions with the correct graph show below. Find the graph that matches each function and write the letter for that graph to the right of the corresponding function.

$$f(x) = x \quad \underline{\hspace{2cm}}$$

$$f(x) = x^2 \quad \underline{\hspace{2cm}}$$

$$f(x) = x^3 \quad \underline{\hspace{2cm}}$$

$$f(x) = \sqrt{x} \quad \underline{\hspace{2cm}}$$

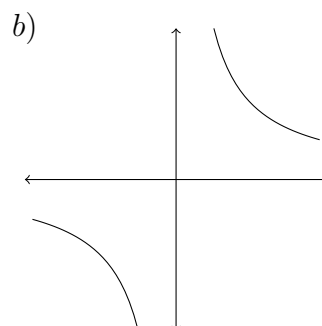
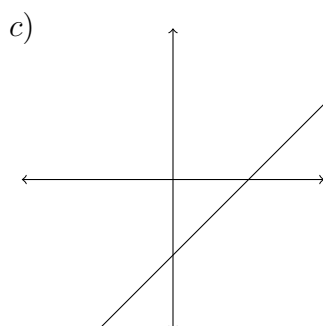
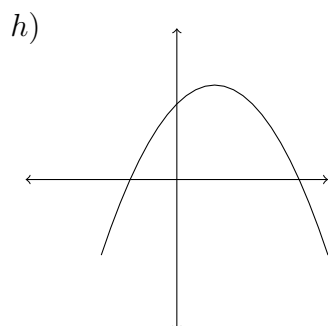
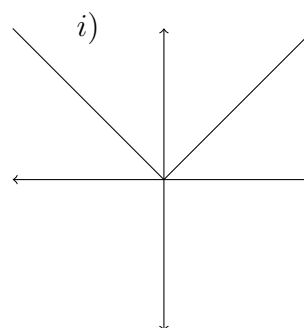
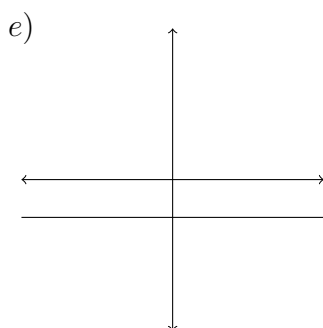
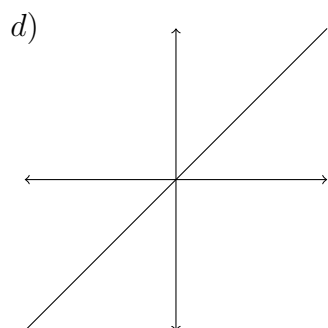
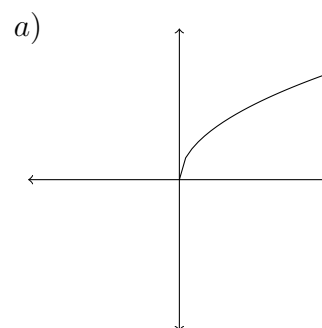
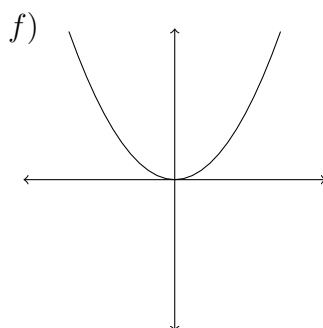
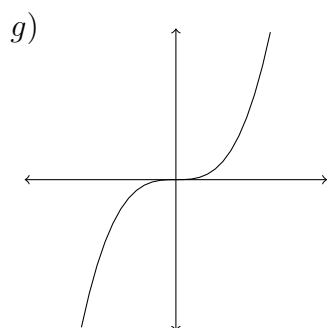
$$f(x) = \frac{1}{x} \quad \underline{\hspace{2cm}}$$

$$f(x) = |x| \quad \underline{\hspace{2cm}}$$

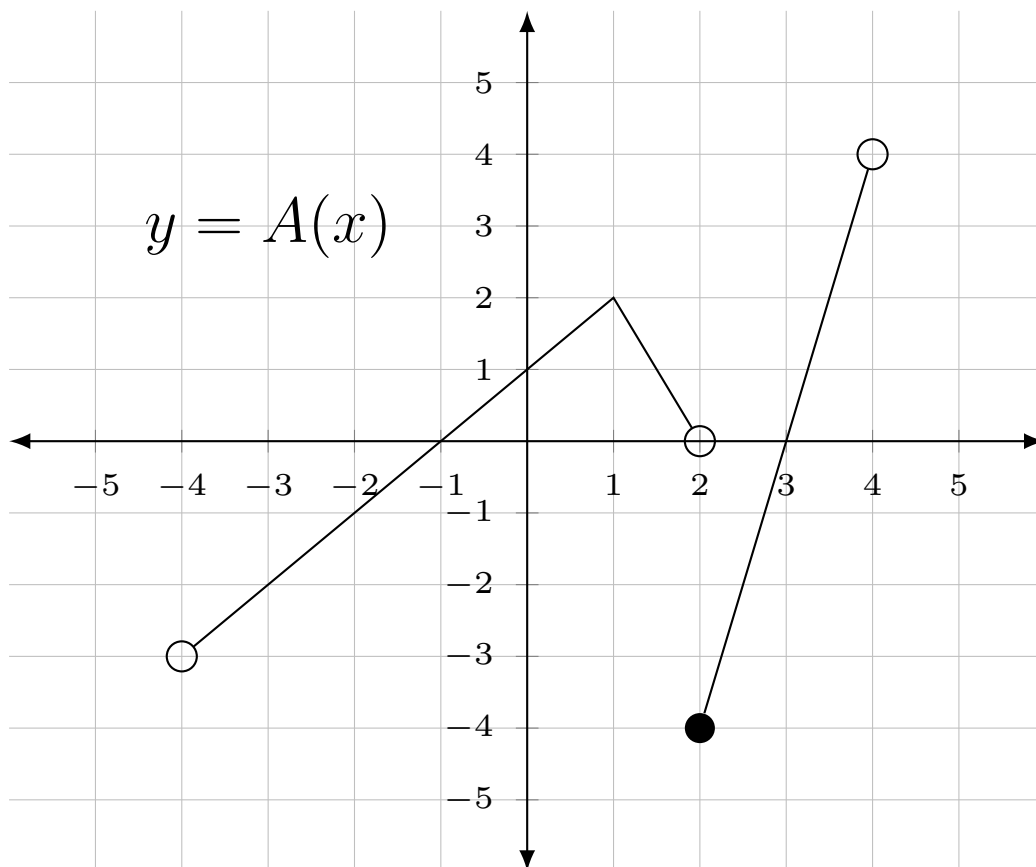
$$f(x) = -1 \quad \underline{\hspace{2cm}}$$

$$f(x) = x - 2 \quad \underline{\hspace{2cm}}$$

$$f(x) = -x^2 + x + 1 \quad \underline{\hspace{2cm}}$$



2). Use the graph of  $A(x)$  to answer the following questions:



- What is  $A(2)$ ?
- What is the y-intercept?
- For what values of  $x$  is  $A(x) = 0$ ?
- What is the domain of  $A$ , in interval notation?
- What is the range of  $A$ , in interval notation?

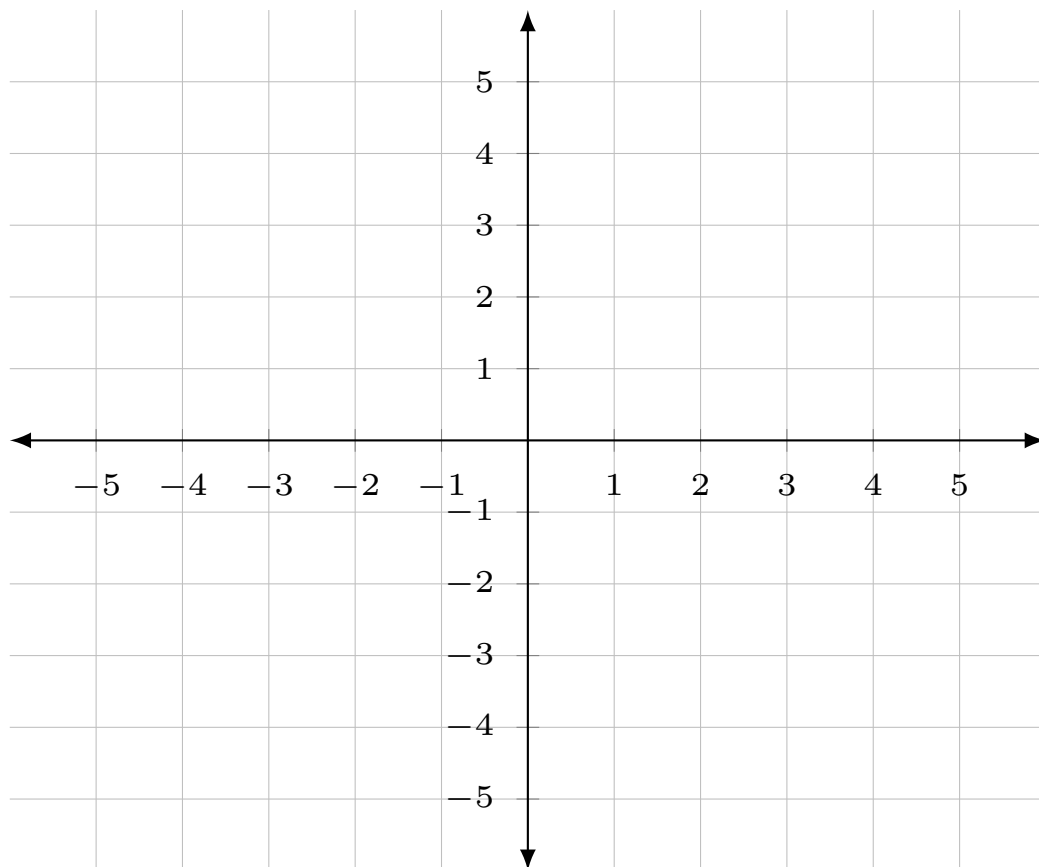
3). Given the function:  $f(x) = -2x + 3$ :

a). Is  $f$  constant, linear, quadratic, or none of these?

b). Find the y-intercept(s) of  $f$ .

c). Find the x-intercept(s) of  $f$ .

d). Plot the intercepts of  $f$  on the axes below and label the coordinates. Also draw the complete graph of  $f$ .



- 4). The proposed California Bullet Train can make the 450 mile trip from Los Angeles to San Francisco in the same time that it takes a regular AMTRAK train to go just 135 miles. How fast does each train go if the bullet train goes 140 mph faster than AMTRAK?

- 5). Perform the operation:

$$\frac{2}{3-t} + \frac{t}{t^2-9}$$

- 6). Perform the operation:

$$\frac{2x+6}{5x-15} \cdot \frac{4(x-3)}{x^2+6x+9}$$

- 7). Perform the operation:

$$\frac{\frac{6-5y}{4y}}{5-\frac{6}{y}}$$

- 8). Solve for  $w$ :

$$\frac{w}{12} + \frac{w+3}{3w} = \frac{1}{w}$$

- 9). Given:

$$\begin{aligned} f(x) &= x - 5 \\ g(x) &= x^2 - 5x \end{aligned}$$

Do the following:

- a). What is  $(f+g)(x)$  and its domain?
- b). What is  $(f-g)(x)$  and its domain?
- c). What is  $(fg)(x)$  and its domain?
- d). What is  $\left(\frac{f}{g}\right)(x)$  and its domain?
- e). What is  $(f \circ g)(x)$  and its domain?
- f). What is  $(g \circ f)(x)$  and its domain?
- g). What is  $(f \circ g)(1)$ ?