

## Math 111 Quiz #1 Answers

1. (a) We are looking for the  $x$ -coordinates of the points on the curve for which  $y = f(x) = 1$ .

So, the  $x$ -values are  $x = 2$ , and  $x = 5$ .

(b)  $4 < x < 5$  or  $(4, 5)$

(c)  $f(4) - f(0) = 4 - (-2) = 6$

2. Note:  $g(1) = 3$  and  $g(-2) = 15$ . So, the two points we are using are  $(1, 3)$  and  $(-2, 15)$ .

$$\text{Average rate of change} = \frac{g(1) - g(-2)}{1 - (-2)} = \frac{3 - 15}{3} = -4$$

3. (a)  $P = 700 + 50t$  or  $P = 50t + 700$

(b) Solving  $1250 = 700 + 50t \Rightarrow 550 = 50t \Rightarrow t = 11$

So, there will be 1250 squirrels at time 11 or in the year 2021.

4. Two Ways To Do This:

- Using the point-slope form:  $y + 5 = \frac{1}{3}(x - 12)$

Solving for  $y$ :  $y = \frac{1}{3}x - 9$

- Using slope-intercept form: Since  $m = \frac{1}{3}$ , we know that our equation looks like  $y = \frac{1}{3}x + b$  for some  $b$ .

Using the point  $(12, -5)$  to find  $b$ :  $-5 = \frac{1}{3}(12) + b \Rightarrow -5 = 4 + b \Rightarrow b = -9$

So,  $y = \frac{1}{3}x - 9$ .