

NAME: Solution

MAC 1147 Section 3077  
Quiz Three

Please show all of your work in a NEAT and ORGANIZED fashion.

1. (3 points) Identify the  $x$ - and  $y$ -intercepts of the graph of the following equation:

$$y = x^2 - 9x + 20$$

$x$ -intercepts:  $x^2 - 9x + 20 = 0$   
 $(x-5)(x-4) = 0$   
 $x = 5, 4 \rightarrow (5, 0), (4, 0)$

$y$ -intercept:  $y = 0^2 - 9(0) + 20 = 20 \rightarrow (0, 20)$

2. (3 points) Write an equation of the line that passes through  $(-2, 7)$  and is parallel to the line  $y = -\frac{3}{2}x + 1$ :

The slope of the line is  $-\frac{3}{2}$  (equal to the slope of the given line)

$y = -\frac{3}{2}x + b$ , passing through  $(-2, 7)$

$$7 = -\frac{3}{2}(-2) + b$$
$$7 = 3 + b$$
$$4 = b \rightarrow y = -\frac{3}{2}x + 4$$

3. (a) (1 point) Determine the domain of the following functions:

$$f(x) = \frac{x}{x+4}, \quad g(x) = \frac{3}{x+2}$$

$f$ : all real numbers  $x$  such that  $x \neq -4$

$g$ : all real numbers  $x$  such that  $x \neq -2$

- (b) (2 points) Find all real value(s) of  $x$  for which  $f(x) = g(x)$ :

$$\frac{x}{x+4} = \frac{3}{x+2} \quad (\text{cross multiply})$$
$$x(x+2) = 3(x+4)$$
$$x^2 + 2x = 3x + 12$$
$$x^2 - x - 12 = 0$$
$$(x-4)(x+3) = 0$$
$$x = 4, -3 \quad (\text{both values are in the domains of } f \text{ and } g)$$