NAME: Solution

MAC 1147 Section 3089
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:

$$y = \sqrt{4x+2}$$

x-intercept: $\sqrt{4x+2} = 0$

$4x+2 = 0$

$4x = -2$

$x = -\frac{1}{2} \rightarrow (-\frac{1}{2}, 0)$

y-intercept: $y = \sqrt{4(0)+2}$

$= \sqrt{2} \rightarrow (0, \sqrt{2})$

2. (3 points) Write an equation of the line that passes through $(10, -1)$ and is perpendicular to the line $y = 5x + 2$:

The slope of the line is $-\frac{1}{5}$ (the negative reciprocal of 5),

$y = -\frac{1}{5}x + b$, passing through $(10, -1)$

$-1 = -\frac{1}{5}(10) + b$

$-1 = -2 + b$

$1 = b \longrightarrow y = -\frac{1}{5}x + 1$

3. (a) (2 points) Determine the domain of the following function:

$$f(t) = \frac{\sqrt{t+3}}{t}$$

$t + 3 \geq 0$ and $t \neq 0$

$t \geq -3$ and $t \neq 0$

The domain of f is all real numbers t such that $t \geq -3$ except $t = 0$,

(b) (1 point) Using the function f above, evaluate $f(x-2)$:

$$f(x-2) = \frac{\sqrt{(x-2)+3}}{x-2} = \frac{\sqrt{x+1}}{x-2}$$