Directions: Please answer the following questions and make sure your answer are legible. You must show your work to receive credit for your answers. You may use technology on this quiz. Good Luck.

1. (7 points) Use the graph of \( y = f(x) \) to answer the following

   (a) Find the domain of \( f \). Write your answer in interval notation. \( (1.6 \# 58) \)
   \(-4,4\]

   (b) Find the range of \( f \). Write your answer in interval notation. \( (1.6 \# 59) \)
   \([-5,5]\)

   (c) Find the zeros of \( f \). \( (1.6 \# 64) \)
   \( x = -4,0,4 \)

   (d) List the intervals where \( f \) is decreasing \( (1.6 \# 69) \)
   \((-4,-2) \cup (-2,4)\)

   (e) List the local maximums of \( f \), if any exist \( (1.6 \# 70) \)
   \( \) None \( \)

   (f) List the local minimums of \( f \), if any exist \( (1.6 \# 71) \)
   \((-2,-5)\)

   (g) Find the maximum of \( f \) (if it exists) \( (1.6 \# 72) \)
   \( \) None \( \)

   (h) Find the minimum of \( f \) (if it exists) \( (1.6 \# 73) \)
   \( 5(-2) = -5 \)

2. (2 points) Let \( f(x) = \sqrt{x} \). Find a formula for a function \( g \) whose graph is obtained from \( f \) from the given sequence of transformations:

   (1) shift left 3 units; (2) shift down 4 units; (3) vertical stretch by a factor of 2 \( (1.7 \# 61) \)

   \[
   \begin{align*}
   1 & : \sqrt{x+3} \\
   2 & : (\sqrt{x+3}) - 4 \\
   3 & : 2 \left( (\sqrt{x+3}) - 4 \right) = 2 \sqrt{x+3} - 8
   \end{align*}
   \]

3. (3 points) For the line with slope \( m = -\frac{1}{5} \) that passes through the point \( P(10,4) \): \( (2.1 \# 5) \)

   (a) Find the point-slope form of the line.
   \( y - 4 = -\frac{1}{5}(x-10) \)

   (b) Find the slope-intercept form of the line.
   \( y = -\frac{1}{5}x + \frac{6}{5} \)

More Questions on the Back
4. (6 points) Use the given graph of \( y = f(x) \) to graph the transformed function:

\[ p(x) = 4 + f(1 - 2x) \]  

(1.7 # 48)

\[ \begin{align*}
(-3,0) & \rightarrow (-1,0) \rightarrow (2,0) \rightarrow (2,4) \\
(0,3) & \rightarrow (-1,3) \rightarrow (2,3) \rightarrow (2,7) \\
(3,0) & \rightarrow (2,0) \rightarrow (-1,0) \rightarrow (-1,4)
\end{align*} \]

The graph for Ex. 38 - 49

5. (8 points) For \( f(x) = \frac{1}{3}|2x - 1| \)  

(2.2 # 27)

(a) Find the x-intercepts (if any).

(b) Graph the function.

\[ |2x - 1| = \begin{cases} 
-(2x-1) & x < \frac{1}{2} \\
(2x-1) & x \geq \frac{1}{2}
\end{cases} \]

\[ \frac{1}{3}|2x - 1| = \begin{cases} 
-\frac{1}{3}(2x-1) & x < \frac{1}{3} \\
\frac{1}{3}(2x-1) & x \geq \frac{1}{3}
\end{cases} \]