Each of the 20 questions is worth five points. To get full/partial credit show all your work.

1. Given \( h(x) = x^2 + 3x + 5 \), evaluate \( h(-3) \)

2. Write the domain of the given function \( f(x) = \frac{x-5}{x^2-10x+25} \) in an interval notation.

3. Find the \( x \)- and \( y \)-intercepts of the function defined by \( f(x) = x^2 - 4 \).

4. Write the equation of the line passing through the points \((-3, 2)\) and \((6, -7)\) in standard form.
5. Given the line $8x + 4y = 4$, find
   a. The slope
   b. The $y$-intercept

6. Given the function defined by $f(x) = x^2 - 1$, determine the average rate of change from $x_1 = -2$ to $x_2 = 0$

7. Write an equation of the line passing through the point ($-4, 1$) and parallel to the line $4x + 4y = 8$. Write the answer in slope-intercept form

8. A speeding ticket is $100 plus $5 for each $mph$ over the speed limit. Write a linear function to model the cost $C(x)$ of a speeding ticket for a person caught driving $x$ $mph$ over the speed limit.
9. Using the linear equations for cost and revenue given by:
   \[ C(x) = 25x + 100; \quad R(x) = 30x \]
   a) Write a linear equation to determine Profit \( P(x) \).
   
   b) Determine the profit in dollars when 20 units are sold and interpret your results.

10. Sketch the graph of \( f(x) = x^2 \)

11. Identify the basic parent functions and transformations for the given function
    \( f(x) = 2|x - 3| + 1 \)
12. Using definition determine if the function \( g(x) = 4x^3 - x \) is even, odd, or neither

13. Given the graph of \( f(x) \), use interval notation to write the interval(s) over which \( f(x) \) is

\[
\begin{align*}
\text{a. Increasing} \\
\text{b. Decreasing}
\end{align*}
\]

14. Given the piecewise function

\[ f(x) = \begin{cases} 
  x + 3 & \text{for } x < -1 \\
  x^2 & \text{for } -1 \leq x < 2 
\end{cases} \]

Evaluate,

a. \( f(-1) \)  

b. \( f(-2) \)
15. Given $g(x) = 2x$ and $h(x) = x^2 - 4x$, find
   a. $(g - h)(x)$
   b. the domain of $(g - h)(x)$ in interval notation

16. Given $f(x) = x^2 + 3$ and $g(x) = 3x + 2$, evaluate $(g \circ f)(x)$

17. Given $f(x) = 4x - 2$, find
   a. $f(x + h)$
   b. the difference quotient $\frac{f(x+h)-f(x)}{h}$
18. Given \( f(x) = -2(x - 1)^2 + 8 \), determine
   a. The vertex
   b. The minimum or maximum value of \( f(x) \)

19. Write \( f(x) = 3x^2 + 12x + 5 \) in vertex form.

20. Given \( f(x) = -x^2 + 4x - 5 \), determine
   a. The axis of symmetry
   b. The range in interval notation