1. State the quadratic formula used to solve equations of the form $ax^2 + bx + c = 0$.

   \[ x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \]

2. Use the vertical line test to determine if the relation listed below is also a function.

   a) $|y| = x + 1$
   b) $y = \sqrt{9 - x^2}$
   c) $y = \log_5 x$

3. What's the domain of

   a) $|y| = x + 1$
   b) $y = \frac{x}{x^2 - 1}$

4. What's the range of

   a) $y = \sqrt{9 - x^2}$
   b) $y = \log_5 x$
5. Find the x-intercept of
   a) \( x = -3 \)   b) \( y = x^2 - 5x - 14 \)

6. Find the y-intercept of
   a) \( y = 3^x \)   b) \( y = |2x - 3| \)

7. Given \( f(x) = \frac{3x}{x^2 - 2} \), \( g(x) = x + 2 \), and \( h(x) = 5 \), find
   a) \( f(2) = \) _____________   \( g(h) = \) _____________   \( h(3) = \) _____________
   b) \( f + g \) (x) = ______________
   c) \( f \circ g \) (2) = ______________

8. When will \( f \circ g \)(3) = \( g \circ f \)(3) = 3? \) When \( f \) and \( g \) are ______________

9. Sketch the graph of \( 3x - y = 6 \)
   Use the x-intercept, the y-intercept, and slope: ________, ________, ________
10. Sketch the graph of \( f(x) = -2x^2 + x - 2 \)

Use the y-intercept, the vertex, and one other point: __________ , __________ , __________

11. Find the remainder of \( (x^4 + x - 1) \div (x - 2) \). remainder = __________

12. Is \( (x - 2) \) a factor of \( x^3 + 2x - 12 \) ? Show Work!

13. Find the quotient in proper form by using synthetic division (18 \( \div \) 5 = 3 + 3/5: proper form, do not say 3 remainder 3)

\( (x^3 + 2x + 4) \div (x + 1) = __________

14. How many solutions does the equation \( x^4 + 2x + 3 = 0 \) have? ______________

How many are positive? ______________

15. What is the slope of the line represented by \( 3x + 2y = -1 \)? ______________

What about the line \( y = 3 \)? ______________
16. What is the equation of the line that
   a) has slope 2 and passes through the point (2, 1) ? __________________
   b) is parallel to the x-axis and passes through (-2, 3) ? _______________

17. Find all of the cube roots of 8. _________________________________

18. If x = 1 is a solution of $x^3 - 3x + 2$. Find the other solutions.