

7. Find the quadratic function that has its vertex at the point $(-2, 2)$ and has a graph passing through the point $(-1, -1)$. (5 points)
8. Fill in the letter representing the formula for each depicted graph. (15 points)
- a. $y = \sqrt{x}$
 - b. $y = |x|$
 - c. $y = x$
 - d. $y = x^2$
 - e. $y = x^3$
 - f. None of the above
9. A polynomial function of degree 5 can have at most how many "bends" in its graph? (5 points)
10. Write down a system of equations one should solve if using polynomial interpolation to determine the polynomial function of minimum degree with graph passing through the three points $(-1, 9)$, $(1, 5)$, and $(3, 25)$. You do **NOT** need to solve the equations. (5 points)
11. Determine the right-hand and left-hand behavior of the graph of $f(x) = -2x^3 + 3x^2 + 1$. (5 points)
12. Find a polynomial function having roots (zeroes) at $x = 0$, $x = 3$, and $x = 6$. There are many correct answers. (5 points)
13. Simplify using polynomial division: $\frac{2x^3 - 5x^2 + 5x - 6}{x - 2}$. (5 points)
14. Consider the polynomial function $f(x) = 2x^4 - 15x^3 + 23x^2 + 15x - 25$.
- a. According the Descarte's Rule of Signs, how many positive real roots can f possibly have? (5 points)
 - b. According the Descarte's Rule of Signs, how many negative real roots can f possibly have? (5 points)
 - c. One root of f is $x = 5$; find all remaining real roots of f . (5 points)
 - d. Completely factor $f(x)$. (5 points)