

(YOU WILL NOT HAVE A CALCULATOR FOR PROBLEMS SIMILAR TO #1-#3 ON YOUR TEST)

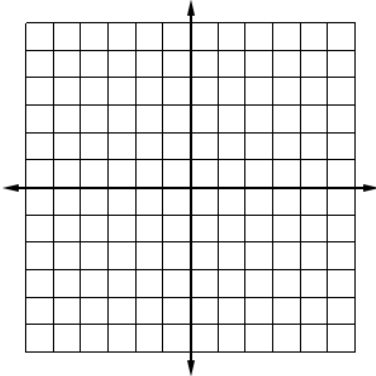
1. Describe the graph of the function and identify the vertex. KNOW ALL THE DIFFERENT FORMS OF A QUADRATIC EQUATION AND WHAT THEY "TELL" YOU ABOUT THE GRAPH.

a.  $p(x) = 2(x + 2)^2 - 1$

b.  $m(x) = 2x^2 + 8x + 7$

2. Describe the graph of the function and find the x-intercepts.  $f(x) = x^2 + 10x + 14$

3. Sketch the graph of  $h(x) = (x - 1)^3 + 4$



KNOW WHAT THE DIRECTIONS FOR EACH QUESTION ARE ASKING YOU TO DO. THIS IS SOMETHING THAT YOU ALSO NEED TO STUDY FOR THE TEST.

4. Write in VERTEX form the equation for a quadratic function that has a vertex at (1, 2) and that passes through the point (3, -6)

5. The path of a baseball is given by the function  $f(x) = -0.007x^2 + x + 4$ , where  $f(x)$  is the height of the baseball (in feet) and  $x$  is the horizontal distance from home plate (in feet). What is the maximum height reached by the baseball? When does the baseball hit the ground? KNOW HOW TO USE THE CALCULATOR TO ANSWER EACH OF THESE QUESTIONS.

6. Use long division to divide  $(8x^4 - 5)$  by  $(2x + 1)$

7. Use synthetic division to show that  $x$  is a solution of the third-degree polynomial equation AND use the result to factor the polynomial completely.  $h(x) = 2x^3 - 17x^2 + 12x + 63$ ,  $x = -\frac{3}{2}$

8. Describe the End Behavior of the function. Then tell how many positive real zeros and how many negative real zeros the function has.  $f(x) = 32x^3 - 52x^2 + 17x + 3$

9. Find all the REAL zeros of the polynomial. Determine the multiplicity of each zero.

a.  $g(x) = x^3 - 4x^2 + 4x$

b.  $h(x) = x^5 - 4x^3 + 8x^2 - 32$

10. Find a polynomial FUNCTION with the given zeros, multiplicities, and degree.

Zero: -1, multiplicity: 2

Zero: -2, multiplicity: 1

Degree: 3

11. Use a calculator to find any REAL zeros of the function and any extrema (minimums/maximums).

$q(x) = 2x^4 - 6x^2 + 1$

THERE ARE 12 QUESTIONS ON YOUR TEST.