

4.5 Locating the Zeros of a Function and Graphing Polynomials

1. Find the roots for each function on the graphing calculator.

a. $y = 4x^4 - 6x^2 - 2x + 1$

b. $y = -x^3 + 4x^2 - 6x + 8$

c. $y = 2x^5 + 3x^4 - 12x + 4$

a) .278, 1.32,

b) 2.88

c) -2.17, .337, 1.17

Plug In: Use either 2nd Trace Zero or let $y=0$ and

2. To sketch a polynomial function:

use 2nd Trace Intersect.

a. Find the zeros of the function. Remember zeros = x-intercepts so graph these points on the x-axis.

b. Find the y-intercept

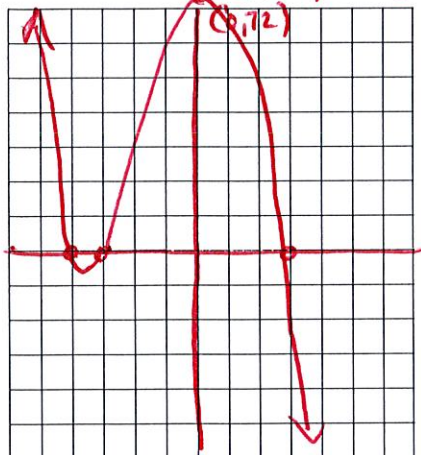
c. Determine the end behavior of the function based on the degree and the leading coefficient.

d. Using the end behavior and the intercepts to make a smooth curve.

e. We will be not be finding max and min points by hand so "estimate" in your sketch.

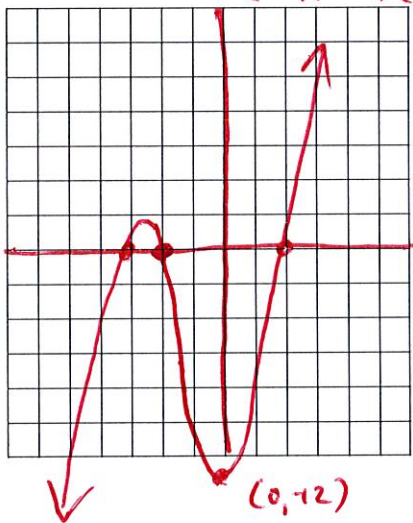
f. $y = -2(x^2 - 9)(x + 4)$

$x=3, x=-3, x=-4$



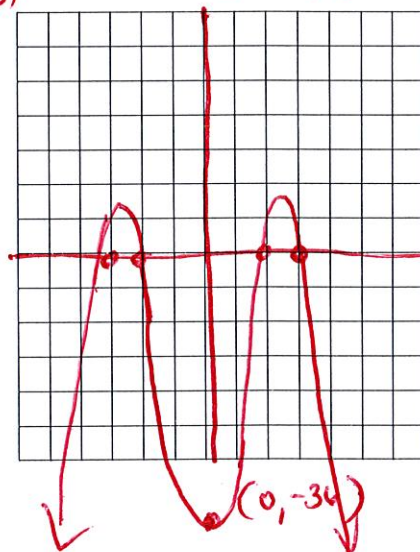
4. $y = x^3 + 3x^2 - 4x - 12$

$x^2(x+3) - 4(x+3)$
 $(x+2)(x-2)(x+3)$



8. $y = -x^4 + 13x^2 - 36$

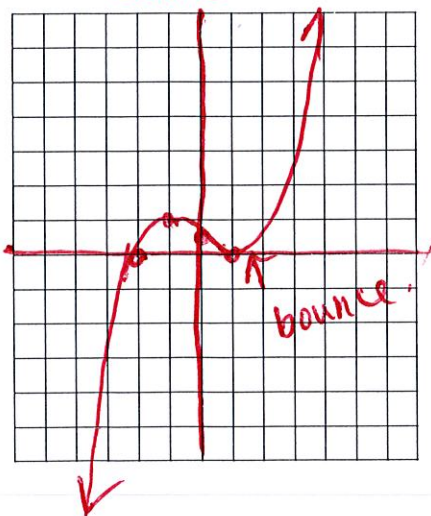
$-1(x^2-9)(x^2-4)$



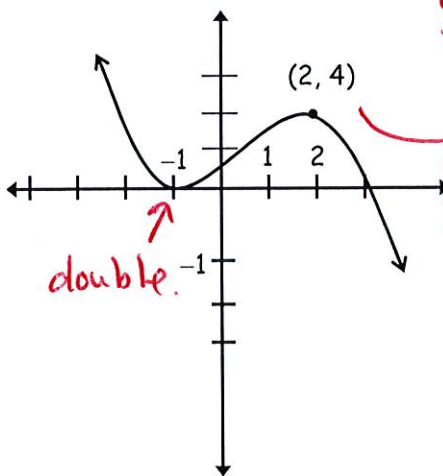
6. $y = \frac{1}{4}(x+2)(x-1)^2$

$(0, 1/2)$

cubic.



7. Write the equation in factored form. Find "a".



$y = a(x+1)^2(x-3)$

$4 = a(2+1)^2(2-3)$

Plug In.
 $4 = a(9)(-1)$

$-4/9 = a$

Homework pg. 213 #15-20 and
Graphing Polynomials Worksheet