

Name: Key Hour: _____ Date: _____

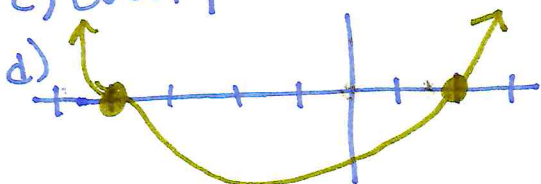
HONORS - Graphing Polynomials in Standard Form Notes

Recall from last week:

For the following factored polynomial: (a) find the zeros (b) state any multiplicities (c) describe the end behavior (d) graph the polynomial

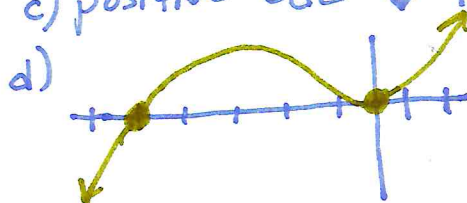
1) $y = (x - 2)(x + 4)^3$

- a) $x = 2$ $x = -4$ $x = -4$ $x = -4$
b) -4 has a multiplicity of 3
c) even positive $\uparrow \uparrow$



2) $y = x^2(x + 5)$

- a) $x = 0$ $x = 0$ $x = -5$
b) 0 has a multiplicity of 2
c) positive odd $\downarrow \uparrow$



Graphing Polynomials in Standard Form

The only new step is to first FACTOR COMPLETELY!

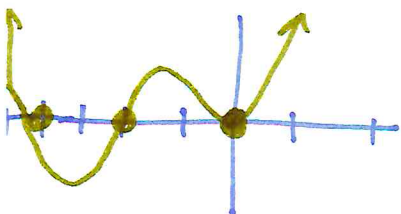
Other than that we follow all of the same steps!

Examples:

1) $y = x^4 + 6x^3 + 8x^2$

$x^2(x^2 + 6x + 8)$
 $x^2(x + 4)(x + 2)$

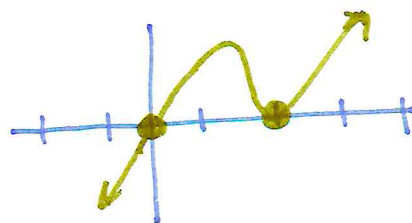
Zeros: $x = 0$ $x = 0$ $x = -4$ $x = -2$
0 has a multiplicity of 2
even positive $\uparrow \uparrow$



2) $y = x^3 - 4x^2 + 4x$

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

Zeros: $x = 0$ $x = 2$ $x = 2$
2 has a multiplicity of 2
positive odd $\downarrow \uparrow$



$$3) y = 2x^3 + 10x^2 + 12x$$

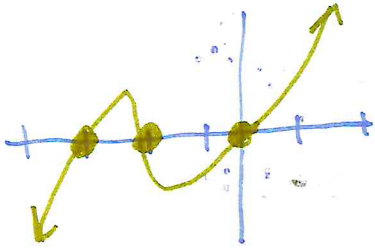
$$2x(x^2 + 5x + 6)$$

$$2x(x+3)(x+2)$$

Zeros: $x=0$ $x=-3$ $x=-2$

No multiples

positive odd $\downarrow \uparrow$



$$4) y = 6x^5 - 15x^4 - 36x^3$$

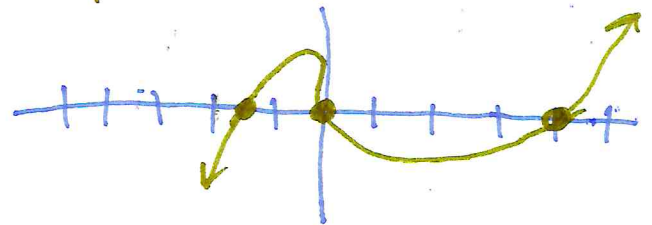
$$3x^3(2x^2 - 5x - 12)$$

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

Zeros: $x=0$ $x=0$ $x=0$

$x=4$ $x=-3/2$

0 has a multiplicity of 3
positive odd $\downarrow \uparrow$



$$5) y = 12x^2 - 64x + 80$$

$$4(3x^2 - 16x + 20)$$

$$4(3x-10)(x-2)$$

Zeros: $x = \frac{10}{3} \approx 3.3$ $x=2$

No multiples

positive even $\uparrow \uparrow$

