

Honors Math 3

Warm Up Review

1. Solve and sketch the graph. Be sure to state the degree, extrema, end behavior and y-intercept.

a)  $x^4 - 5x^2 = 36$

# of extrema: 3

Degree: 4

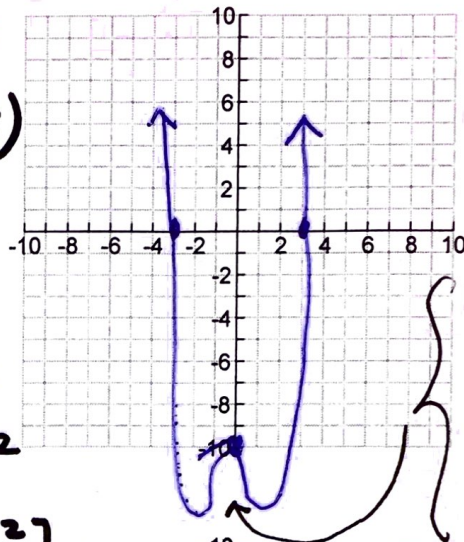
End behavior:

R  $x \rightarrow \infty$   $y \rightarrow \infty$   
 L  $x \rightarrow -\infty$   $y \rightarrow \infty$

Roots:  $\pm 3, \pm 2i$

$x^4 - 5x^2 - 36 = 0$   
 $(x^2 - 9)(x^2 + 4)$   
 $(x+3)(x-3)$

$x^2 + 4 = 0$   
 $\sqrt{x^2 + 4}$   
 $x = \pm 2i$



On graph for imaginary roots include an extra somewhere - don't know where without calc.

$(0, -196)$

b)  $-(x^2 + 5x - 14)^2 = -[(x+7)(x-2)]^2$

# of extrema: 3

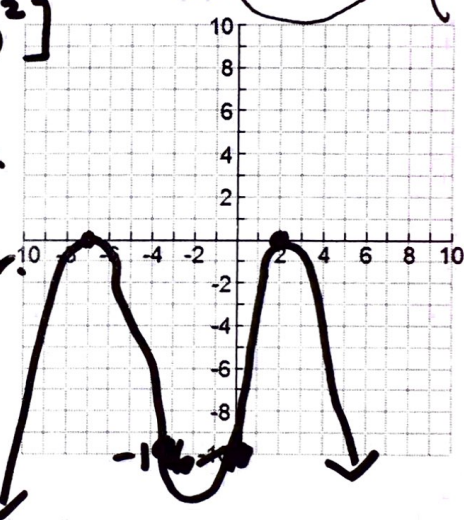
Degree: 4

End behavior:

R  $x \rightarrow \infty$   $y \rightarrow -\infty$   
 L  $x \rightarrow -\infty$   $y \rightarrow -\infty$

Roots: 2 d.r., -7 d.r.

$x+7=0$   
 $x=-7$  d.r.  
 $x-2=0$   
 $x=2$  d.r.



c)  $(x+2)^3 - (x+2) = 0$

# of extrema: 2

Degree: 3

End behavior:

R  $x \rightarrow \infty$   $y \rightarrow \infty$   
 L  $x \rightarrow -\infty$   $y \rightarrow -\infty$

Roots: -2, -3, -1

$a = x+2$   
 $a^3 - a = 0$   
 $a(a^2 - 1) = 0$   
 $a(a+1)(a-1) = 0$   
 $(x+2)(x+3)(x-1) = 0$   
 $x = -2, -3, -1$

