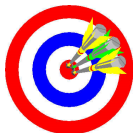


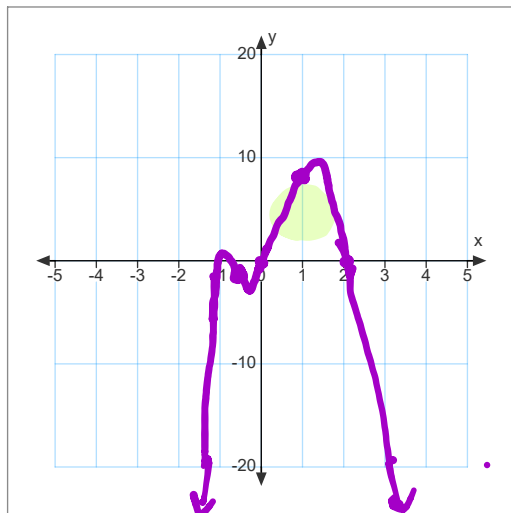
## (Factoring)(Polynomials)(Part 2)

### Math Learning Target:



"I can apply the Remainder Theorem and the Factor Theorem, when it is applicable. I can use these theorems to sketch polynomial functions. I can apply what I have learned in familiar and unfamiliar settings."

**Example:** Sketch  $y = -2x^4 + 6x^2 + 4x = f(x)$



since  $f(0) = 0$ ,  
 $x$  is a factor.

$$f(x) = x(-2x^3 + 6x + 4)$$

$$f(x) = x \cdot g(x)$$

since  $g(-1) = 0$   
 $x+1$  is a factor

$$\begin{array}{r|rrrr} -1 & -2 & 0 & 6 & 4 \\ & \downarrow & & & \\ \hline & -2 & 2 & 4 & 0 \\ & & & & R \end{array}$$

end-behav.

As  $x \rightarrow \pm\infty$ ,  
 $y \rightarrow -\infty$

$$f(x) = x(x+1)(-2x^2 + 2x + 4)$$

$$f(x) = -2(x)(x+1)(x^2 - x - 2)$$

$$f(x) = -2x(x+1)(x-2)(x+1)$$

$x = 0, x = 2, x = -1$  (order 2) are  $x$ -ints

local  
extrema  
max 3

*MathSIP!* page 177 #6de, 7e, 8e, 9, 10, 14, 16, 17

Once the core work for today is done, for those of you who would like to be challenged...

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$$y = a(x-h)^2 + k$$

$$y = a(x-0)^2 - 11$$

$$y = ax^2 - 11$$

$$-3 = a(-1)^2 - 11$$

$$-3 = a - 11$$

$$a = 8 \quad y = 8x^2 - 11$$

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