

Integrated Math III – Solving & Sketching higher order polynomials

Name: _____ Period: _____ Date: _____

Directions - For the problems below, complete the following: 1. Divide to determine if the given binomial is a factor of the function. 2. Use that information to completely factor the function (write the function as the divisor x the quotient and completely factor the quotient). 3. Solve the polynomial. 4. Sketch a graph of the polynomial.

Example: $k(x) = x^3 - 6x^2 + 12x - 8$; $(x - 2)$ $x - 2 = 0$
 $x = 2$

1.)
$$\begin{array}{r|rrrr} 2 & 1 & -6 & 12 & -8 \\ & \downarrow & & & \\ \hline & & 2 & -8 & 8 \\ & & & & \boxed{0} R \end{array}$$

 $x^2 - 4x + 4$

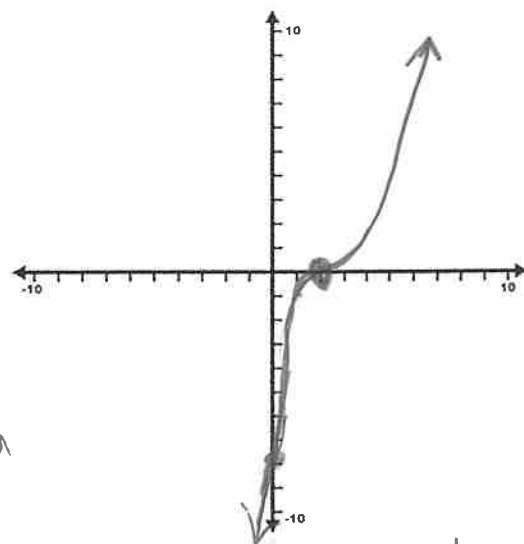
2.) $k(x) = (x - 2)(x^2 - 4x + 4)$

$k(x) = (x - 2)(x - 2)(x - 2)$

$k(x) = (x - 2)^3$

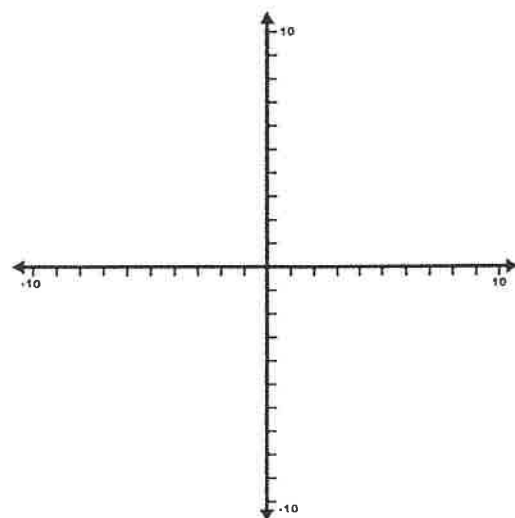
3.) $x = 2$

4.) \rightarrow
 multiplicity is 3, so bend!

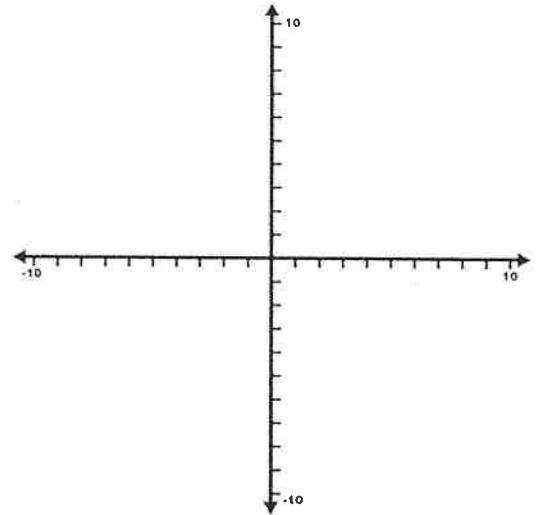


1. $f(x) = x^3 - 39x - 70$; $(x + 5)$

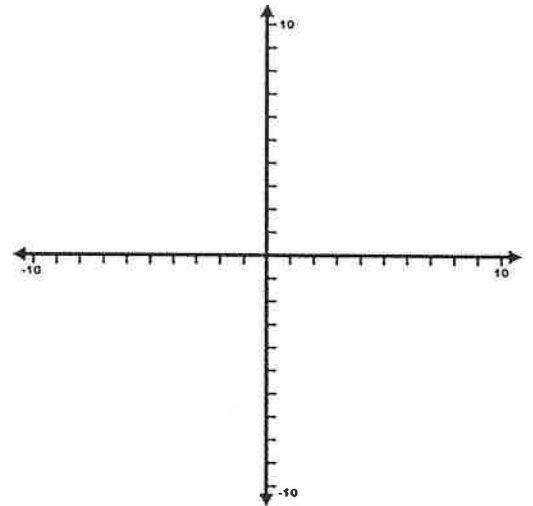
\leftarrow Placeholder zero?



2. $g(x) = x^4 + x^3 - 15x^2 - 9x + 54$; $(x - 2)$



3. $h(x) = x^5 + 4x^4 - 5x^3 - 20x^2 + 4x + 16$; $(x + 4)$



4. $p(x) = x^5 + 3x^4 - 20x^3 - 48x^2 + 64x$; $(x - 1)$ ← Placeholder zero?

