

## Bellwork Wednesday, November 7, 2018

1. Find all EXACT complex zeros by factoring:  $y = 4x^7 + 16x^5 - 180x^3$

2. Use this polynomial:  $y = x^4 - x^3 - 18x^2 + 6x + 72$

Two zeros are  $-3$  and  $4$ , find the EXACT remaining real zeros.

1. Find all EXACT complex zeros by factoring:  $y = 4x^7 + 16x^5 - 180x^3$

$$4x^3(x^4 + 4x^2 - 45)$$

$$\begin{array}{r} -45 \\ +9 \quad -5 \\ +4 \end{array}$$

→

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

$$\begin{aligned} x^2 + 9 &= 0 \\ \sqrt{x^2} &= \sqrt{-9} \\ x &= \pm 3i \end{aligned}$$

$$\begin{aligned} x^2 - 5 &= 0 \\ \sqrt{x^2} &= \sqrt{5} \\ x &= \pm \sqrt{5} \end{aligned}$$

$$x = 0, \pm 3i, \pm \sqrt{5}$$

2. Use this polynomial:  $y = x^4 - x^3 - 18x^2 + 6x + 72$

Two zeros are -3 and 4, find the EXACT remaining real zeros.

$$\begin{array}{r|rrrrr} -3 & 1 & -1 & -18 & 6 & 72 \\ & & -3 & 12 & 18 & -72 \\ \hline & 1 & -4 & -6 & 24 & 0 \end{array}$$

$x^3 - 4x^2 - 6x + 24$

$$\begin{array}{r|rrrr} 4 & 1 & -4 & -6 & 24 \\ & & 4 & 0 & -24 \\ \hline & 1 & 0 & -6 & 0 \end{array}$$

$$x^2 - 6$$



$$x^2 - 6 = 0$$

$$\sqrt{x^2} = \sqrt{6}$$

$$x = \pm \sqrt{6}$$