

MAY 25/10

$$\begin{array}{r} 2x^2 - 4x + 6 \\ 3x+5 \overline{) 6x^3 - 2x^2 - 2x + 30} \\ \underline{- 6x^3 + 10x^2} \\ -12x^2 - 2x \\ \underline{- -12x^2 - 20x} \\ 18x + 30 \\ \underline{18x + 30} \\ 0 \end{array}$$

$r=0$

$$\begin{array}{r} 5x^2 + 10x + 3 \\ 2x-4 \overline{) 10x^3 + 0x^2 - 34x + 4} \\ \underline{- 10x^3 - 20x^2} \\ 20x^2 - 34x \\ \underline{- 20x^2 - 40x} \\ 6x + 4 \\ \underline{- 6x - 12} \\ 16 \end{array}$$

$$(x-2) \rightarrow 2 \quad \text{MAKE IT ZERO}$$

$$2 \left| \begin{array}{cccc|c} 3 & -10 & 13 & -26 & \\ \hline & 6 & -8 & 10 & \\ \hline 3 & -4 & 5 & -16 & \end{array} \right. \quad R-16$$

$$(x-2)(3x^2-4x+5) \quad r-16$$

$$3 \left| \begin{array}{cccc|c} 4 & -14 & 0 & -1 & 27 \\ \hline & 12 & -6 & -10 & -57 \\ \hline 4 & -2 & -6 & -19 & -30 \end{array} \right. \quad r-30$$

$$-5 \left| \begin{array}{cccccc|c} 2 & 11 & -1 & -30 & 6 & 30 & \\ \hline & -10 & -5 & 30 & 0 & -30 & \\ \hline 2 & 1 & -6 & 0 & 6 & 0 & \end{array} \right.$$

$$(x+5)(2x^4+x^3-6x^2+6)$$

$$-2 \left| \begin{array}{cccc} 1 & 0 & -6 & -4 \\ -2 & 4 & 4 & 4 \end{array} \right|$$

$$1 \quad -2 \quad -2 \quad 0$$

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

$$P(-2) = x^3 - 6x - 4$$

$$= (-2)^3 - 6(-2) - 4$$

$$= -8 + 12 - 4$$

$$= 0$$

$$f(-3) = x^4 - 10x^2 - 2x + 4$$

$$= (-3)^4 - 10(-3)^2 - 2(-3) + 4$$

$$= 81 - 90 + 6 + 4$$

$$= 1$$

$$-3 \left| \begin{array}{cccc} 1 & 0 & -10 & -2 & 4 \\ -3 & 9 & 3 & -3 & -3 \end{array} \right|$$

$$1 \quad -3 \quad -1 \quad 1 \quad (1) = r$$

$$(x^{10} - 15x + 18) \div (x-1)$$

$$1 \overline{) 100 \dots} \quad \text{YUCK}$$

$$\begin{aligned} f(1) &= x^{10} - 15x + 18 \\ &= (1)^{10} - 15(1) + 18 \\ &= 4 \end{aligned}$$

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

FACTORS ???

$$\frac{6}{1} = \frac{\pm 1 \pm 2 \pm 3 \pm 6}{\pm 1}$$

$(x-1)$ NO WAY

$$\begin{array}{r|rrrr} 1 & 1 & -4 & 1 & 6 \\ & & & 1 & -3 & -2 \\ \hline & 1 & -3 & -2 & 4 \end{array}$$

$$\begin{array}{r|rrrr} x+1 & 1 & -4 & 1 & 6 \\ & & -1 & 5 & -6 \\ \hline & 1 & -5 & 6 & 0 \end{array}$$

$$(x+1)(x^2 - 5x + 6)$$

$$(x+1)(x-2)(x-3)$$

$$2x^3 + 3x^2 - 8x + 3$$

$$\frac{3}{2} = \frac{\pm 1 \pm 3}{\pm 1 \pm 2} \quad \pm 1 \quad \pm \frac{1}{2} \quad \pm 3 \quad \pm \frac{3}{2}$$

$$(x-1)$$

$$\begin{array}{r|rrrr} 1 & 2 & 3 & -8 & 3 \\ & & 2 & 5 & -3 \\ \hline & 2 & 5 & -3 & 0 \end{array}$$

$$f(1) = 2x^3 + 3x^2 - 8x + 3$$

$$f(1) = 2(1)^3 + 3(1)^2 - 8(1) + 3$$

$$= 0$$

$$(x-1)(2x^2 + 5x - 3)$$

$$(x-1)(2x-1)(x+3)$$

WHAT ARE THE ROOTS?

$$1, \frac{1}{2}, -3$$

$$x^3 - 3x^2 - 4x + 12$$

$$\frac{12}{1} = \pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 12$$

$$f(1) = x^3 - 3x^2 - 4x + 12$$

$$f(1) = 1^3 - 3(1)^2 - 4(1) + 12$$

$$f(1) = 6 \quad \times \quad \text{NOT A FACTOR}$$

$$f(-1) = (-1)^3 - 3(-1)^2 - 4(-1) + 12$$

$$f(-1) = 10 \quad \times \quad \text{NOT A FACTOR}$$

$$f(2) = (2)^3 - 3(2)^2 - 4(2) + 12$$

$$f(2) = 0 \quad \checkmark$$

$$2 \left| \begin{array}{cccc} 1 & -3 & -4 & 12 \\ & 2 & -2 & -12 \\ \hline 1 & -1 & -6 & 0 \end{array} \right|$$

$$(x - 2)(x^2 - x - 6)$$

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

WHAT ARE THE ROOTS

$$2, 3, -2$$