

Factorización de polinomios.

Descomponer en factores $2x^4 - 12x^3 + 18x^2 = 2x^2(x^2 - 6x + 9) = 2x^2(x - 3)^2$

$$\begin{array}{r|rrr}
 & 1 & -6 & 9 \\
 3 & & 3 & -9 \\
 \hline
 & 1 & -3 & 0 \\
 3 & & 3 & \\
 \hline
 & 1 & 0 &
 \end{array}$$

Divisores de 9: 1, 3 y 9

Raíces: 3 una raíz doble

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a) $x^3 - 6x^2 + 11x - 6 = (x - 1)(x - 2)(x - 3)$

$$\begin{array}{r|rrrr}
 & 1 & -6 & 11 & -6 \\
 1 & & 1 & -5 & 6 \\
 \hline
 & 1 & -5 & 6 & 0 \\
 3 & & 3 & -6 & \\
 \hline
 & 1 & -2 & 0 & \\
 2 & & 2 & & \\
 \hline
 & 1 & 0 & &
 \end{array}$$

b) $2x^3 + 6x^2 - x - 30 =$ *no lo podemos descomponer*

$$\begin{array}{r|rrrr}
 & 2 & 6 & -1 & -30 \\
 -5 & & -10 & 20 & \\
 \hline
 & 2 & -4 & 19 & \\
 \hline
 & & & & \\
 \hline
 & & & &
 \end{array}$$

$$c) \quad x^3 + 7x^2 + 14x + 8 = (x+1)(x+2)(x+4)$$

$$\begin{array}{r|rrrr}
 & 1 & 7 & 14 & 8 \\
 -1 & & -1 & -6 & -8 \\
 \hline
 & 1 & 6 & 8 & 0 \\
 -2 & & -2 & -8 & \\
 \hline
 & 1 & 4 & 0 & \\
 -4 & & -4 & & \\
 \hline
 & 1 & 0 & &
 \end{array}$$

4)

$$3x^3 - 24x^2 + 48x =$$

$$= 3x(x^2 - 8x + 16) = 3x(x-4)^2$$

$$5x^3 + 20x^2 =$$

$$= 5x^2(x+4)$$

$$\begin{array}{r|rrr}
 & 1 & -8 & 16 \\
 4 & & 4 & -16 \\
 \hline
 & 1 & -4 & 0 \\
 4 & & -4 & \\
 \hline
 & 1 & 0 &
 \end{array}$$

$$\frac{5x^3 + 20x^2}{3x^3 - 24x^2 + 48x} = \frac{5x^2(x+4)}{3x(x-4)^2} = \frac{5x(x+4)}{3(x-4)^2}$$