

1)

$$\begin{array}{r|rrrrr}
 & 1 & -4 & 2 & 5 & -4 \\
 1 & & 1 & -3 & -1 & 4 \\
 \hline
 & 1 & -3 & -1 & 4 & 0
 \end{array}
 \quad \rightarrow 1 \text{ es raíz}$$

$$\begin{array}{r|rrrrr}
 & 1 & -4 & 2 & 5 & -4 \\
 -3 & & -3 & 21 & -69 & 192 \\
 \hline
 & 1 & -7 & 23 & -64 & 188
 \end{array}
 \quad \rightarrow -3 \text{ no es raíz}$$

$$\begin{array}{r|rrrrr}
 & 1 & -4 & 2 & 5 & -4 \\
 5 & & 5 & 5 & 35 & 200 \\
 \hline
 & 1 & 1 & 7 & 40 & 196
 \end{array}
 \quad \rightarrow 5 \text{ no es raíz}$$

$$\begin{array}{r|rrrrr}
 & 1 & -4 & 2 & 5 & -4 \\
 -7 & & -7 & 77 & -553 & 3836 \\
 \hline
 & 1 & -11 & 79 & -548 & 3832
 \end{array}
 \quad \rightarrow -7 \text{ no es raíz}$$

2)

$$\begin{aligned}
 P(x) &= (x-2)(x+5)(x-6) = (x^2 - 2x + 5x - 10)(x-6) = (x^2 + 3x - 10)(x-6) = \\
 &= x^3 + 3x^2 - 10x - 6x^2 - 18x + 60 = x^3 - 3x^2 - 28x + 60
 \end{aligned}$$

$$\begin{array}{r|rrrr}
 & 1 & -3 & -28 & 60 \\
 2 & & 2 & -2 & -60 \\
 \hline
 & 1 & -1 & -30 & 0
 \end{array}$$

$$\begin{array}{r|rrr}
 & 1 & -1 & -30 \\
 -5 & & -5 & 30 \\
 \hline
 & 1 & -6 & 0
 \end{array}$$

$$\begin{array}{r|rr}
 & 1 & -6 \\
 6 & & 6 \\
 \hline
 & 1 & 0
 \end{array}$$

3) Escribe un polinomio de tercer grado cuyas raíces sean 2, -2 y 3

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

4)

$$x^2 - x$$

$$\begin{array}{c|ccc} & 1 & -1 & 0 \\ 1 & & 1 & 0 \\ \hline & 1 & 0 & 0 \end{array} \rightarrow \text{dos raíces } 0 \text{ y } 1$$

$$x^3 - 1$$

$$\begin{array}{c|cccc} & 1 & 0 & 0 & -1 \\ 1 & & 1 & 1 & 1 \\ \hline & 1 & 1 & 1 & 0 \end{array} \rightarrow \text{raíz } 1$$

$$x^4 + x$$

$$\begin{array}{c|ccccc} & 1 & 0 & 0 & 1 & 0 \\ 0 & & 0 & 0 & 0 & 0 \\ \hline & 1 & 0 & 0 & 1 & 0 \end{array} \rightarrow \text{raíz } 0, -1$$

$$\begin{array}{c|cccc} & 1 & 0 & 0 & 1 \\ -1 & & -1 & 1 & -1 \\ \hline & 1 & -1 & 1 & 0 \end{array}$$