

T. 51

$$P(x) = 2x^3 - 5x^2 - 11x + m$$

a) $x_2 = 1$ - radac. $\Rightarrow P(-1) = 0 \Rightarrow -2 - 5 + 11 + m = 0$.
 $m = -4$

$$P(x) = 2x^3 - 5x^2 - 11x - 4$$

b)

$$\begin{array}{r} 2x^3 - 5x^2 - 11x - 4 \quad | \quad x+1 \\ \underline{2x^2 + 2x^2} \\ -4x^2 - 11x - 4 \\ \underline{-4x^2 - 4x} \\ -4x - 4 \\ \underline{-4x - 4} \\ 0 \end{array}$$

$$2x^2 - 4x - 4 = 0$$

$$\Delta = 49 + 32 = 81$$

$$\frac{4 \pm 9}{2}$$

$$\left[\begin{array}{c} 4 \\ -1/2 \end{array} \right]$$

T. 52

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

$x+1 \Rightarrow a = -1, r = 0 \Rightarrow P(-1) = 0$

$x-2 \Rightarrow a = 2, r = 12 \Rightarrow P(2) = 12$

$$\begin{cases} a - 1 + b + 1 + 6 = 0 \\ 16a + 8 + 4b - 2 + 6 = 12 \end{cases} \Leftrightarrow \begin{cases} a + b = -6 \\ 16a + 4b = 0 \end{cases} \Leftrightarrow \begin{cases} 3a = 6 \\ b = -8 \end{cases}$$

• $P(x) = 2x^4 + x^3 - 8x^2 - x + 6$

• $x+3 \Rightarrow a = -3 \Rightarrow r = P(-3) = 162 - 27 - 72 + 3 + 6 = 72$

or b: $a = 2, b = -8, r = 72$

V. 53

$$P(x) = x(x-1)(x-a) + 12$$

$$x = -1 \rightarrow -1 \cdot (-2) \cdot (-1-a) + 12 = 0.$$

$$-2(1+a) = -12$$

$$1+a = 6$$

$$a = 5$$

$$P(x) = (x^2 - x)(x-5) + 12 = x^3 - 5x^2 - x^2 + 5x + 12$$

$$P(x) = x^3 - 6x^2 + 5x + 12$$

$$\begin{array}{r} x^3 - 6x^2 + 5x + 12 \quad | \quad x+1 \\ \underline{-(x^3 + x^2)} \\ -7x^2 + 5x \\ \underline{-(-7x^2 - 7x)} \\ 12x + 12 \\ \underline{-(12x + 12)} \\ 0 \end{array}$$

$$x^2 - 7x + 12 = 0$$

$$\left\{ \begin{array}{l} x = 3 \\ x = 4 \\ x = -1 \end{array} \right.$$

or $P(x) = (x+1)(x-3)(x-4)$

V. 57

$$P(x) = 2x^3 + 5x^2 - 3x - 4$$

$$x+2 \Rightarrow d = -2 \Rightarrow 2 = P(-2) = -16 + 20 + 6 - 4 = 6$$

$$\text{osb: } d = 6$$