

$A = 1^r x^r - r x - 1 \rightarrow 1^r A = 9x^r - 4x - 1 = (1^r x - 1)(1^r x + 1) \Rightarrow A = (x-1)(1^r x + 1)$ $B = 1^r x^r - 1^r x - 4 \rightarrow 1^r B = 1^r x^r - 4x - 10 = (1^r x - 4)(1^r x + 2) \Rightarrow B = (1^r x - 4)(1^r x + 1)$ $\rightarrow y = \frac{(x-1)(1^r x + 1)(1^r x + 1)(1^r x - 4)}{(1^r x - 1)(1^r x + 1)} = -(1^r x + 1)(1^r x - 4) = -(4x^r - 10x + 1^r x - 4)$ $= -4x^r + 1^r x + 4 \rightarrow \text{مشتق} = -\frac{b}{1^r} = \frac{-11^r}{-1^r} = \frac{11^r}{1^r}$ $= 4\left(\frac{1^r x^{11^r}}{1^r 1^r}\right) + 1^r\left(\frac{1^r}{1^r}\right) + 4 = \frac{-149}{1^r} + \frac{149x^r}{1^r} + \frac{1^r}{1^r} = \frac{-149 + 1^r x + 11^r}{1^r} = \frac{1^r x}{1^r} = y$	6
$1^r S = \omega P + v \rightarrow 1^r\left(\frac{m+r}{m}\right) = \omega\left(\frac{-r}{m}\right) + v \Rightarrow \frac{1^r m + 1^r}{m} = \frac{-\omega}{m} + v$ $\rightarrow \frac{1^r m + 1^r + \omega}{m} = v \rightarrow 1^r m + 1^r = v m \rightarrow 1^r m = 1^r \rightarrow m = 1^r$ $\alpha^r + \beta^r = S^r - rP = \left(\frac{m+r}{m}\right)^r - r\left(\frac{-r}{m}\right) = \left(\frac{1^r}{1^r}\right)^r - r\left(\frac{-r}{1^r}\right) = \frac{1^r}{1^r} + \frac{r}{1^r} = \frac{11^r}{1^r}$	7
$\frac{K\alpha + \beta^r}{\omega P^r} = \frac{K\alpha + \beta^r}{\omega \beta^r} \times \frac{\alpha^r}{\alpha^r} = \frac{K\alpha^r + \beta^r(\alpha^r \beta^r)}{\omega \alpha^r \beta^r} \rightarrow \alpha^r \beta^r = P^r = (1^r)^r = 1^r$ $\rightarrow \frac{K\alpha^r + K\beta^r}{1^r} = \frac{\alpha^r + \beta^r}{\omega} = \frac{S^r - 1^r S P}{\omega} = \frac{1^r \omega - 1^r(\omega)(1^r)}{\omega} = \frac{1^r \omega}{\omega} = 1^r$	8
$y_1 = 1^r(1^r) + 10 = 1^r$ $y_1 = 1^r(-1^r) + 10 = 1^r \rightarrow \text{نقاط: } (1^r, 1^r), (-1^r, 1^r), \text{ عرض (نقطه) } = 1^r = c$ $y_1 = a(1^r) + b(1^r) + c = 1^r a + 1^r b + 1^r = 1^r \rightarrow 1^r a + 1^r b = 10 \rightarrow 1^r a + 1^r b = 10 \rightarrow 4a + 1^r b = 10$ $y_1' = a(-1^r) + b(-1^r) + c = 1^r a - 1^r b + 1^r = 1^r \rightarrow 1^r a - 1^r b = 0$ $\rightarrow \begin{cases} 1^r a - 1^r b = 0 \\ 4a + 1^r b = 10 \end{cases} \rightarrow 10a = 10 \rightarrow a = 1, \quad 1^r a - 1^r b = 0 \rightarrow 1^r b = 1^r \rightarrow b = 1^r$ $\rightarrow y_1 = 1^r x + 1^r x + 1^r \rightarrow \frac{-b}{1^r a} = \frac{-1^r}{1^r} \rightarrow \frac{1^r}{1^r} \rightarrow x = \frac{-1^r}{1^r}$	9
$1^r x^r + (m+1)x + m+4 = x \rightarrow 1^r x^r + (m+1)x - x + m+4 = 1^r x^r + mx + m+4$ $\rightarrow \text{مشتق} = \Delta = 0 \rightarrow m^r - \epsilon(r)(m+4) = m^r - 1^r m - \epsilon 1 = 0$ $= (m-1^r)(m+1^r) = 0 \rightarrow m = 1^r, -1^r$	10