$x^3 - 11x^2 + 38x - 40 = 0$

$x^3 - 11x^2 + 38x - 40 \mid x - 2$

$x^3 - 2x^2 \quad \mid x^2 - 9x + 20$

$-9x^2 + 38x$

$-9x^2 + 18x$

$20x - 40$

$20x - 40$

0

$(x^2 - 9x + 20)(x - 2) = 0$

$x^2 - 9x + 20 = 0$

$D = 81 - 80 = 1$

$x_1 = \frac{9+1}{2} = 5$

$x_1 = \frac{9-1}{2} = 4$

Ответ: 2; 4; 5

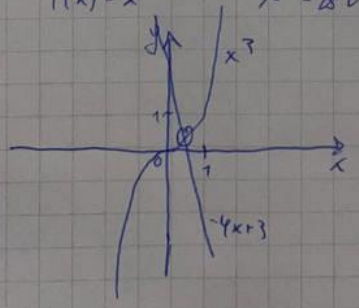
$x^3 - x^2 - 8x - 4$

	1	-1	-8	-4
-2	1	-3	-2	0

(-2)

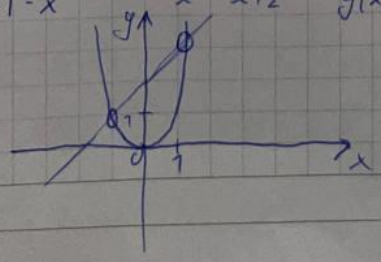
$(x+2)(x^2 - 3x - 2)$

а) $x^3 + 4x - 3$ $\quad f(x) = x^3$ $\quad x^3 = 8x - 4x + 3$ $\quad g(x) = -4x + 3$



1 действ. корень

б) $x^4 - x - 2$ $\quad f(x) = x^4$ $\quad x^4 = x + 2$ $\quad g(x) = x + 2$



2 корня

$A = \begin{vmatrix} 11 & -3 \\ -15 & -2 \end{vmatrix}$ $\det A = -22 - 45 = -67$

$\det A = \begin{vmatrix} 1 & -2 & 3 \\ 4 & 0 & 6 \\ -7 & 8 & 9 \end{vmatrix} = +2\begin{vmatrix} 4 & 6 \\ -7 & 9 \end{vmatrix} - 8\begin{vmatrix} 1 & 3 \\ 4 & 6 \end{vmatrix} = 2(36+42) - 8(6-12) = 2 \cdot 78 - 8 \cdot (-6) = 204$

$\det A = \begin{vmatrix} 3 & -2 & 1 & 1 \\ 5 & 1 & 2 & 0 \\ -1 & 1 & -1 & 1 \\ 2 & -1 & 6 & -3 \end{vmatrix} = \cancel{\begin{vmatrix} 2 & 1 & 1 \\ 1 & 2 & 0 \\ -1 & 6 & -3 \end{vmatrix}} \cancel{-} \cancel{3} - 5\begin{vmatrix} -2 & 1 & 1 \\ 1 & -1 & 1 \\ -1 & 6 & -3 \end{vmatrix} + \begin{vmatrix} 3 & 1 & 1 \\ -1 & -1 & 1 \\ 2 & 6 & -3 \end{vmatrix} - 2\begin{vmatrix} 3 & -2 & 1 \\ -1 & 1 & 1 \\ 2 & -1 & -3 \end{vmatrix} =$

(1) (2) (3)

$= -5 \cdot 13 - 14 - 2 \cdot (-5) = -65 - 14 + 10 = -69$

(1) $\begin{vmatrix} -2 & 1 & 1 \\ 1 & -1 & 1 \\ -1 & 6 & -3 \end{vmatrix} \begin{matrix} -2 & 1 \\ 1 & -1 \\ -1 & 6 \end{matrix} = -2 \cdot 1 \cdot 3 - 1 \cdot 1 \cdot 1 + 1 \cdot 1 \cdot 6 - 1 \cdot 1 \cdot 1 + 6 \cdot 1 \cdot 2 + 3 \cdot 1 \cdot 1 =$

$= -6 - 1 + 6 - 1 + 12 + 3 = 13$

(2) $\begin{vmatrix} 3 & 1 & 1 \\ -1 & -1 & 1 \\ 2 & 6 & -3 \end{vmatrix} \begin{matrix} 3 & 1 \\ -1 & -1 \\ 2 & 6 \end{matrix} = 3 \cdot 1 \cdot 3 + 1 \cdot 1 \cdot 2 - 1 \cdot 1 \cdot 6 + 2 \cdot 1 \cdot 1 - 6 \cdot 1 \cdot 3 - 3 \cdot 1 \cdot 1 =$

$= 9 + 2 - 6 + 2 - 18 - 3 = -14$

(3) $\begin{vmatrix} 3 & -2 & 1 \\ -1 & 1 & 1 \\ 2 & -1 & -3 \end{vmatrix} \begin{matrix} 3 & -2 \\ -1 & 1 \\ 2 & -1 \end{matrix} = -3 \cdot 1 \cdot 3 - 2 \cdot 1 \cdot 2 + 1 \cdot 1 \cdot 1 - 2 \cdot 1 \cdot 1 + 1 \cdot 1 \cdot 3 + 3 \cdot 1 \cdot 2 =$

$= -9 - 4 + 1 - 2 + 3 + 6 = -5$