

$$1.2.59 \quad \begin{vmatrix} 2 & -3 \\ 5 & -4 \end{vmatrix} = 2 \cdot -4 - 5 \cdot -3 = 7$$

$$1.2.60 \quad \begin{vmatrix} a & b \\ 0 & 0 \end{vmatrix} = a \cdot 0 - 0 \cdot b = 0$$

1.2.61

$$\begin{vmatrix} x^2 & x \\ x^2 & y^2 \end{vmatrix} = x^2 y^2 - x^2 y^2 = 0$$

1.2.62

$$\begin{vmatrix} a & 3a \\ b & 3b \end{vmatrix} = a \cdot 3b - b \cdot 3a = 3ab - 3ab = 0$$

1.2.63

$$\begin{vmatrix} \cos \alpha & \sin \alpha \\ \sin \alpha & \cos \alpha \end{vmatrix} = \cos \alpha \cdot \cos \alpha - \sin \alpha \cdot \sin \alpha = \cos^2 \alpha - \sin^2 \alpha$$

1.2.64

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

1.2.65

$$\begin{pmatrix} 2x-3 & 4 \\ -x & -3 \end{pmatrix} = 0 = (2x-3) \cdot (-3) - (-x) \cdot 4 =$$

$$= -6x + 9 + 4x = 0 = -2x + 9 = 0$$

$$x = 4,5$$

1.2.66

$$\begin{pmatrix} x+3 & x+1 \\ x-1 & x-2 \end{pmatrix} = (x+3)(x-2) - (x+1)(x-1) =$$

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

$$= -2x + 3x - 6 + 1 = x - 5 = 0$$

$$x = 5$$

1.2.67

$$\begin{pmatrix} 3-x & x+2 \\ x+1 & x-1 \end{pmatrix} = 6 = 3x - 3 - x^2 + x -$$

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

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

$$= -5 - x^2 + x - x^2 = -5 - 2x^2 + x =$$

1.2.65

$$\begin{pmatrix} 2x-3 & 4 \\ -x & -3 \end{pmatrix} = 0 = (2x-3) \cdot (-3) - (-x) \cdot 4 =$$

$$= -6x + 9 + 4x = 0 = -2x + 9 = 0$$

$$x = 4,5$$

1.2.66

$$\begin{pmatrix} x+3 & x+1 \\ x-1 & x-2 \end{pmatrix} = (x+3)(x-2) - (x+1)(x-1) =$$

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

$$= -2x + 3x - 6 + 1 = x - 5 = 0$$

$$x = 5$$

1.2.67

$$\begin{pmatrix} 3-x & x+2 \\ x+1 & x-1 \end{pmatrix} = 6 = 3x - 3 - x^2 + x -$$

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

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

$$= -5 - x^2 + 4 - x^2 = -5 - 2x^2 + 4x =$$

$$= 1$$

$$\begin{vmatrix} 1 & 1 & 0 \\ 2 & 3 & 1 \\ 0 & 2 & 3 \end{vmatrix} = (-1)^2 \cdot \begin{vmatrix} 3 & 1 \\ 2 & 3 \end{vmatrix} + (-1)^3 \cdot \begin{vmatrix} 2 & 1 \\ 0 & 3 \end{vmatrix} + (-1)^4 \cdot \begin{vmatrix} 2 & 3 \\ 0 & 2 \end{vmatrix}$$

$$= 1 \cdot 7 + -1 \cdot 6 + 1 \cdot 4 = 1$$

$$1.2.7.3$$

$$\begin{vmatrix} -2 & 3 & 5 \\ 4 & 1 & -2 \\ 1 & -3 & 2 \end{vmatrix} = (-1)^2 \cdot \begin{vmatrix} 1 & -2 \\ -3 & 2 \end{vmatrix} + (-1)^3 \cdot \begin{vmatrix} 4 & -2 \\ 1 & 2 \end{vmatrix} +$$

$$+ (-1)^4 \cdot \begin{vmatrix} 4 & 1 \\ 1 & -3 \end{vmatrix} = 1 \cdot (-2) \cdot -4 + -1 \cdot (-1) \cdot 8 +$$

$$+ 1 \cdot 3 \cdot 10 + 1 \cdot 5 \cdot 13 = -87$$

$$1.2.7.4$$

$$\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} = (-1)^2 \cdot \begin{vmatrix} c & a \\ a & b \end{vmatrix} + (-1)^3 \cdot \begin{vmatrix} b & a \\ c & b \end{vmatrix} +$$

$$(-1)^4 \cdot \begin{vmatrix} b & c \\ c & a \end{vmatrix} = 1 \cdot cb - 2a + -1 \cdot 2b - ca +$$

$$+ 1 \cdot ba - 2c = cb - 2a - 2b - ca + ba$$

$$\begin{vmatrix} a & 0 & 0 \\ 0 & b & 0 \\ 0 & 0 & c \end{vmatrix} = \cancel{a \cdot b \cdot c} - a \cdot b \cdot c - a \cdot 0 \cdot 0 -$$

$$- 0 \cdot 0 \cdot c + 0 \cdot 0 \cdot 0 + 0 \cdot 0 \cdot 0 - 0 \cdot 0 \cdot b =$$

$$- 0$$

$$1.2.3$$

$$\begin{vmatrix} 0 & 1 & 1 \\ 1 & 0 & 0 \\ 1 & 1 & 0 \end{vmatrix}$$

$$= \cancel{0 \cdot 0 \cdot 0} - 0 \cdot 1 \cdot 1 - 1 \cdot 1 \cdot 0 +$$

$$+ 1 \cdot 1 \cdot 1 + 1 \cdot 1 \cdot 1 - 1 \cdot 1 \cdot 0 = 2$$

$$1.2.4$$

$$\begin{vmatrix} \cos a & \cos b & 0 \\ \cos a & 0 & \cos y \\ 0 & \cos b & \cos y \end{vmatrix}$$

$$= \cos a \cdot 0 \cdot \cos y -$$

$$- \cos a \cdot \cos y \cdot \cos b - \cos a \cdot \cos b \cdot \cos y$$

$$+ \cos a \cdot \cos b \cdot \cos y + 0 \cdot \cos b \cdot \cos y$$

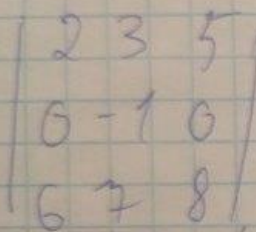
$$- \cos y - 0 \cdot 0 \cdot 0 =$$

1.2.78



$$= 0 \cdot 1 \cdot 0 - 0 \cdot 2 \cdot 2 - 1 \cdot 2 \cdot 0 \\ + 2 \cdot 0 \cdot 2 + 0 \cdot 2 \cdot 2 - 0 \cdot 0 \cdot 1 = 0$$

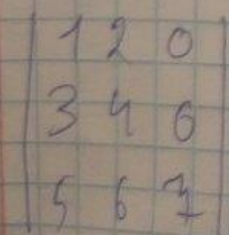
1.2.79.



$$= (-1)^2 \cdot \begin{vmatrix} 0 & 0 \\ 6 & 8 \end{vmatrix} + (-1)^3 \cdot \begin{vmatrix} 2 & 5 \\ 6 & 8 \end{vmatrix}$$

$$+ (-1)^4 \cdot \begin{vmatrix} 2 & 5 \\ 0 & 0 \end{vmatrix} = 1 \cdot 0 + (-1) \cdot 14 - 14 + 1 \cdot 0 = -14$$

1.2.80



$$= (-1)^2 \cdot \begin{vmatrix} 2 & 0 \\ 4 & 0 \end{vmatrix} + (-1)^3 \cdot \begin{vmatrix} 1 & 0 \\ 3 & 6 \end{vmatrix} -$$

$$- (-1)^4 \cdot \begin{vmatrix} 1 & 2 \\ 3 & 4 \end{vmatrix} = 0 \cdot 1 \cdot 0 - -1 \cdot 0 - -1 \cdot 0 -$$

$$-1 \cdot -2 = 2$$