

③

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a)

$$(4, 0, -8, 1, 2) - (6, -1, -4, 3, -5)$$

$$(-2, 1, -4, -2, 7)$$

b)

$$(-18, 6, 12, 24, 24) + (8, 0, -16, 2, 4)$$

$$(-10, 6, -4, 26, 28)$$

c)

$$(-6, 2, 4, 8, 8) - (42, -7, 28, 21, -35)$$

$$(-48, 9, 32, -13, 43)$$

$$(32, 0, -64, 8, 16) + (-3, 1, 2, 4, 4)$$

$$(29, 1, -62, 12, 20)$$

$$(-48, 9, 32, -13, 43) - (29, 1, -62, 12, 20)$$

$$(-77, 8, 94, -25, 23)$$

$$④ \quad a \cdot (1, -1, 3, 5) + b(2, 1, 0, -3) = (1, -4, 9, 18)$$

$$\begin{aligned} a + 2b &= 1 \\ -a + b &= -4 \end{aligned}$$

$$-a + (-1) = -4$$

$$-a = -3$$

$$3b = -3$$

$$b = -1$$

$$a = 3$$

⑥

$$-2C_1 + (-3C_2) + C_3 = 0$$

$$6C_1 + C_2 + 5C_3 = 4$$

$$9C_1 + 2C_2 + 7C_3 = 5$$

$$\left[\begin{array}{ccc|c} -2 & -3 & 1 & 0 \\ 6 & 1 & 5 & 4 \\ 9 & 2 & 7 & 5 \end{array} \right] \xrightarrow{L_2 \leftrightarrow L_1} \left[\begin{array}{ccc|c} 6 & 1 & 5 & 4 \\ -2 & -3 & 1 & 0 \\ 9 & 2 & 7 & 5 \end{array} \right]$$

$$\left[\begin{array}{ccc|c} -2 & -3 & 1 & 0 \\ 6 & 1 & 5 & 4 \\ 9 & 2 & 7 & 5 \end{array} \right] \xrightarrow{L_1 \cdot -\frac{1}{2}} \left[\begin{array}{ccc|c} 1 & \frac{3}{2} & -\frac{1}{2} & 0 \\ 6 & 1 & 5 & 4 \\ 9 & 2 & 7 & 5 \end{array} \right] \xrightarrow{L_2 - 6L_1, L_3 - 9L_1}$$

$$\left[\begin{array}{ccc|c} 1 & \frac{3}{2} & -\frac{1}{2} & 0 \\ 0 & -23/2 & 23/2 & 5 \\ 0 & -8 & 8 & 4 \end{array} \right] \xrightarrow{L_2 \cdot -\frac{2}{23}} \left[\begin{array}{ccc|c} 1 & \frac{3}{2} & -\frac{1}{2} & 0 \\ 0 & 1 & -1 & -10/23 \\ 0 & -8 & 8 & 4 \end{array} \right] \xrightarrow{L_3 + 8L_2}$$

$$\left[\begin{array}{ccc|c} 1 & 3/2 & -1/2 & 0 \\ 0 & 1 & -1 & -10/23 \\ 0 & 0 & 0 & 57/28 \\ & & & 3 \end{array} \right] \xrightarrow{23 \cdot \frac{23}{57}} \left[\begin{array}{ccc|c} 1 & 3/2 & -1/2 & 0 \\ 0 & 1 & -1 & -10/23 \\ 0 & 0 & 0 & 1 \\ & & & 3 \end{array} \right]$$

Não existe escalonados

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a) $\|\vec{v}\| = \sqrt{16 + 9}$ mesmo sentido $\rightarrow (\frac{4}{5}; \frac{-3}{5})$
 $\|\vec{v}\| = \sqrt{25} = 5$ sentido oposto $\rightarrow (-\frac{4}{5}; \frac{3}{5})$

c)

$$\|\vec{v}\| = \sqrt{1 + 0 + 4 + 1 + 9}$$

$$\|\vec{v}\| = \sqrt{15}$$

mesmo sentido $\rightarrow (\frac{1}{\sqrt{15}}; \frac{0}{\sqrt{15}}; \frac{4}{\sqrt{15}}; \frac{1}{\sqrt{15}}; \frac{9}{\sqrt{15}})$

sentido oposto $\rightarrow (-\frac{1}{\sqrt{15}}; -\frac{0}{\sqrt{15}}; -\frac{4}{\sqrt{15}}; -\frac{1}{\sqrt{15}}; -\frac{9}{\sqrt{15}})$

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c) $\|(-4, 4, -6) + (2, -6, 8)\|$

$$\sqrt{(-2)^2 + (-2)^2 + (2)^2}$$

$$\sqrt{4 + 4 + 4} \rightarrow \sqrt{12} \rightarrow 2\sqrt{3}$$

$$\begin{array}{r|l} 12 & 2 \\ 6 & 2 \\ 3 & 3 \\ 1 & \end{array}$$