Beatriz Gonçalves Eleutério

① $\begin{vmatrix} p & 2 & 2 \\ p & 4 & 4 \\ p & 4 & 1 \end{vmatrix}$ $\begin{matrix} p & 2 \\ p & 4 \\ p & 4 \end{matrix}$

$8p + 16p + 2p = 26p$

$4p + 8p + 8p = 20p$

$\text{Det} = 20p - 26p = -18$

$-6p = -18$

$p = \frac{-18}{-6}$

$p = 3$

$\begin{vmatrix} 3 & -1 & 2 \\ 3 & -2 & 4 \\ 3 & -2 & 1 \end{vmatrix}$ $\begin{matrix} 3 & -1 \\ 3 & -2 \\ 3 & -2 \end{matrix}$

$-12 - 24 - 3 = -39$

$-6 - 12 - 12 = -30$

$\text{Det} = -30 - (-39) = 9$

Resposta: E

③ $\begin{bmatrix} ya & d & g/x \\ yb & e & h/x \\ yc & f & i/x \end{bmatrix} \begin{matrix} ya & d \\ yb & e \\ yc & f \end{matrix}$

$yc \cdot e \cdot \frac{g}{x}$

$f \cdot \frac{h}{x} \cdot y \cdot d$

$\frac{i}{x} \cdot y \cdot b \cdot d$

$\frac{y}{x}(ce \cdot g + h \cdot f \cdot a + i \cdot b \cdot d)$

$-$

$ya \cdot e \cdot \frac{i}{x}$

$d \cdot \frac{h}{x} \cdot yc$

$\frac{g}{x} \cdot y \cdot b \cdot f$

$\frac{y}{x}(a \cdot e \cdot i + d \cdot h \cdot c + g \cdot b \cdot f)$

$\rightarrow \frac{x}{y}$

Resposta: C

④ $\begin{bmatrix} 2 & 1 & 0 \\ k & k & k \\ 1 & 2 & -2 \end{bmatrix} \begin{matrix} 2 & 1 \\ k & k \\ 1 & 2 \end{matrix}$

$0 \quad 4k \quad -2k = 2k$

$-4k + k \quad 0 = -3k$

$Det = -3k - 2k = 10$

$-5k = 10$

$k = \frac{10}{-5} \Rightarrow k = -2$

$\begin{bmatrix} 2 & 1 & 0 \\ 2 & 1 & -3 \\ 1 & 2 & -2 \end{bmatrix} \begin{matrix} 2 & 1 \\ 2 & 1 \\ 1 & 2 \end{matrix}$

$0 \quad -12 \quad -4 = -16$

$-4 \quad -3 \quad 0 = -7$

$Det = -7 - (-16) = 9$

Resposta: C

(6)

$$\begin{vmatrix} 1 & x & x^2 & 1 & x \\ 1 & 2 & 4 & 1 & 2 \\ 1 & -3 & 9 & 1 & -3 \end{vmatrix}$$

$2x^2 - 12 + 9x$

$18 + 4x - 3x^2$

$-3x^2 + 4x + 18 - 2x^2 + 12 + 9x = 0$

$-5x^2 - 5x + 30 = 0$

$\Delta = (-5)^2 - 4.(-5).30$

$\Delta = 25 + 600$

$\Delta = 625$

$$x = \frac{5 \pm \sqrt{625}}{2.(-5)}$$

$$x = \frac{5 \pm 25}{-10}$$

$$x' = \frac{5 + 25}{-10} = \frac{30}{-10} = \boxed{-3}$$

$$x'' = \frac{5 - 25}{-10} = \frac{-20}{-10} = \boxed{2}$$

Resposta: -3; 2

(7) $1 . 2 . 1 . (-2) . 3 = \boxed{-12}$

↳ aplicação da regra do triângulo

Resposta: D