$$= (x-p)\begin{vmatrix} x & -1 & q \\ p & 1 & q \\ q & 0 & x \end{vmatrix}$$

(Taking common $(x-p)$ from C_2)

$$= (x-p)\begin{vmatrix} x & -1 & q \\ p+x & 0 & 2q \\ q & 0 & x \end{vmatrix}$$

(Operating $R_2 \to R_2 + R_1$)

$$= (x-p).1.\begin{vmatrix} p+x & 2q \\ q & x \end{vmatrix}$$ (Expanding by C_2)

$$= (x-p)\{(p+x)x - q.2q\}$$

$$= (x-p)(px + x^2 - 2\,q^2)$$

$$= (x-p)(x^2 + px - 2q^2)$$ Proved

3. If $A = \begin{vmatrix} zy & x & yz \\ xz & y & zx \\ yx & z & xy \end{vmatrix}$, then the value of A is equal to: (ISC Sem 1-2021)

(a) 0
(b) xyz
(c) 1
(d) $\frac{1}{xyz}$

Answer: ____________

Solution: **(a)** C_1 and C_3 are identical. So, value of determinant = 0

4. If A is a square matrix of order 3, then |2A| is equal to: (ISC 2023)

(a) 2|A|

(b) 4|A|

(c) 8|A|

(d) 6|A|

Solution: **(c)** For a square matrix A of order n, $|kA| = k^n.|A|$

$|2A| = 2^3|A| = 8|A|$