SECTION - A

44/50

Q1. Find two rational numbers between 4 and 5.

Solution:

$4 = \frac{4}{5} \times 5$ and $5 = \frac{5}{5} \times 5$

i.e., $4 = \frac{20}{5}$ and $5 = \frac{25}{5}$

The numbers are $\frac{21}{5}$ and $\frac{22}{5}$

Q2. Find the value of k, if $2x-1$ is a factor of the polynomial $6x^2 + kx - 2$.

Solution:

$2x-1$ is a factor of $p(x) = 6x^2 + kx - 2$

$\Rightarrow p\left(\frac{1}{2}\right) = 0$

$\Rightarrow 6 \cdot \frac{1}{4} + 6 \cdot \frac{1}{2} - 2 = 0$

$\Rightarrow k = 1$

Q3. Find one solution of $y - 5 = 0$ in a Cartesian plane.

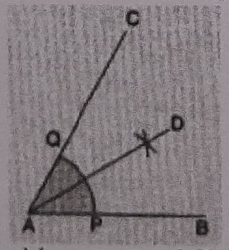
Solution:

$y - 5 = 0 \Rightarrow y = 5$

$\therefore (0,5), (1,5), (2,5)$ any one.

Q4. Construct an acute angle and draw its bisector.

Solution: Here we are taking an acute angle of 60°.



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Part A

Question No 1 to 4 carry 1 mark each.

1. If A is a square matrix of order 3 with $|A| = 4$ Then what is the value of $|-2A|$

$$|-2A| = (-2)^3 |A| = -8(4) = -32$$

2. If $y = \sin^{-1} x + \cos^{-1} x$

$$y = \frac{\pi}{2} \quad \left[\because \sin^{-1} x + \cos^{-1} x = \frac{\pi}{2}\right]$$

$$\frac{dy}{dx} = 0.$$

3. Write order and degree

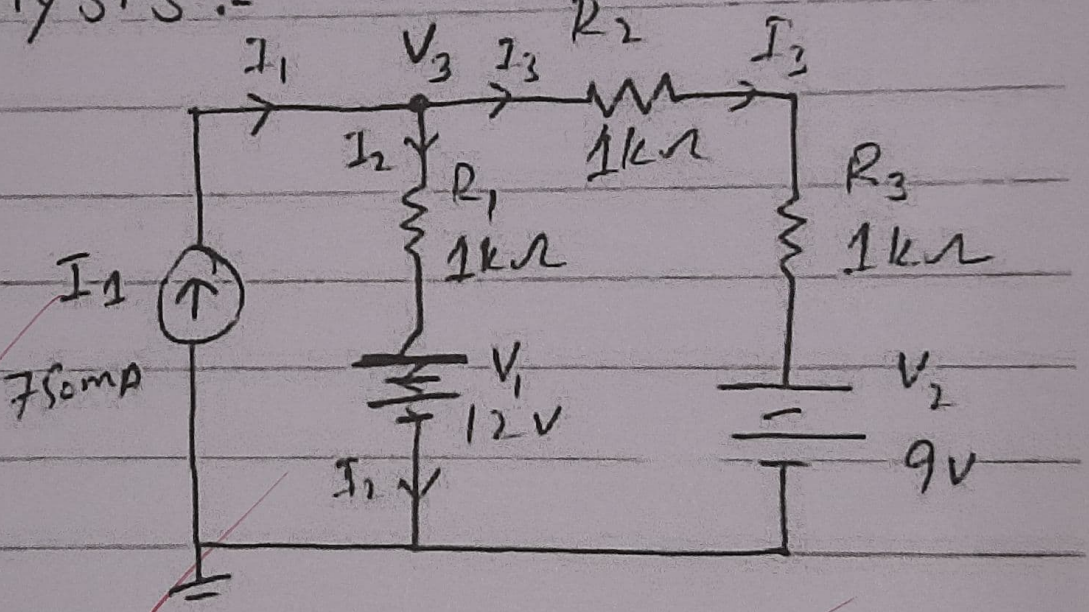
$$\left(\frac{d^4y}{dx^4}\right)^2 = \left[x + \left(\frac{dy}{dx}\right)^2\right]^3$$

Order = 4

degree = 2

(Q#01) Exam-2.

Nodal Analysis:-



let, we apply KCL at node (V_3).

$$\Rightarrow \quad -I_1 + I_2 + I_3 = 0 \qquad \text{Put values}$$

$$\Rightarrow \quad -750\,mA + \frac{V_3 - V_1}{1k} + \frac{V_3 - V_2}{1k + 1k} = 0$$

multiply with 2k on Both sides

$$-1500\,(\text{volt}) + 2V_3 - 2V_1 + V_3 - V_2 = 0$$