$$\frac{5x-11}{2x^2+x-6} = \frac{A}{x+2} + \frac{B}{2x-3}$$

$$\Rightarrow \frac{5x-11}{(x+2)(2x-3)} = \frac{A(2x-3)+B(x+2)}{(x+2)(2x-3)}$$

$$\Rightarrow 5x-11 = A(2x-3)+B(x+2)$$

$$\Rightarrow 5x-11 = (2A+B)x+(-3A+2B)$$

[comparing the co-efficient of x and constant term in both the sides]

$$2A+B=5 \quad \text{———} \quad (i) \qquad -3A+2B=-11 \quad \text{———} \quad (ii)$$

$$\Rightarrow B = 5-2A \quad \text{———} \quad (iii)$$

Put the value of B = 5-2A in (ii)

$$-3A+2(5-2A) = -11$$

$$-3A+10-4A = -11.$$

$$-7A = -21$$

$$A = 3.$$

Put the value of A = 3 in (iii),

$$B = 5-2(3)$$

$$= 5-6$$

$$= -1$$

Therefore, A = 3, B = -1.

$$x^2 + px + q = 0$$

$$x_{1/2} = -\frac{p}{2} \pm \sqrt{\left(\frac{p}{2}\right)^2 - q}$$

$$W = \int_{s_1}^{s_2} F(s) \cdot \cos\alpha \, ds$$

$$v = \frac{ds}{dt}$$

$$\tanh x = \frac{e^x - e^{-x}}{e^x + e^{+x}}$$

$$\Theta = \underline{I} \cdot N$$

$$u_C \overset{!!}{=} U(1 - e^{-t/RC})$$

$$C + O_2 \rightarrow CO_2$$

$$f_r = \frac{1}{2\pi} \cdot \frac{1}{\sqrt{LC}} \; ; \; \omega = 2\pi f_r$$

$$4 FeS_2 + 11 O_2 \rightarrow 2 Fe_2O_3 + 8 SO_4$$

$$-\frac{d}{dt} \int_A B \, dA = \oint_L E' \, dl = -\int_A \left(\frac{\partial B}{\partial t} + \mathrm{rot}\,(B \times v) \right) dA$$

$$?\, x \neq y \; ; \; z = x$$

$$\updownarrow ?$$

$$HCl + H_2O \rightleftarrows Cl^- + H_3O^+$$

$$W_{rot} = \frac{1}{2} \cdot J\omega^2$$

$$a^2 = b^2 + c^2$$

$$V = \frac{1}{6} \pi h (3 e_1^2 + 3 e_2^2 + h^2)$$

$$P_v = \int_{\varphi=0}^{2\pi} \int_{\vartheta=0}^{\pi} \frac{r^2}{S G_2} H_\varphi H_\varphi^* \sin\vartheta \, d\vartheta \, d\varphi$$

Solution 21

$\lambda x^2 + 2xy + y^2 = (ax+by)^2 + (cx+dy)^2$
$\forall\, x, y \in \mathbb{R}$

Compare Coefficient of x^2

$\lambda^2 = a^2 + c^2$ 1) ×

$\Rightarrow$ λ is not a negative number 2)

$\Rightarrow$ option 1 is False 3)

4)

Compare Coefficient of y^2

$b^2 + d^2 = 1$

Compare Coefficient of xy

$ab + cd = 1$

$\because\ b^2 + d^2 = 1 \Rightarrow$ b, d are less than 1 and greater than -1

$-1 \leq b, d \leq 1$

$\Rightarrow a, c \geqslant 1 \quad (\because ab + dc = 1)$

$\Rightarrow \lambda \geqslant 1 \quad (\because \lambda^2 + a^2 + c^2)$

Ans-2 $\boxed{\lambda \geqslant 1}$