

**PART : MATHEMATICS**

1. There are 6 white and 4 black balls in bag. A dice is thrown and number indicate on dice, number of balls are drawn from the bag, then probability that all drawn balls are white.

- (1)  $\frac{4}{5}$                       (2)  $\frac{1}{5}$                       (3)  $\frac{2}{5}$                       (4)  $\frac{5}{7}$

Ans. (2)

Sol. Probability of all drawn balls white

$$\begin{aligned}
 &= \frac{1}{6} \left[ \frac{{}^6C_1}{{}^{10}C_1} + \frac{{}^6C_2}{{}^{10}C_2} + \frac{{}^6C_3}{{}^{10}C_3} + \frac{{}^6C_4}{{}^{10}C_4} + \frac{{}^6C_5}{{}^{10}C_5} + \frac{{}^6C_6}{{}^{10}C_6} \right] \\
 &= \frac{1}{6} \left[ \frac{6}{10} + \frac{6 \times 5}{10 \times 9} + \frac{6 \times 5 \times 4}{10 \times 9 \times 8} + \frac{6 \times 5 \times 4 \times 3}{10 \times 9 \times 8 \times 7} + \frac{6 \times 120}{10 \times 9 \times 8 \times 7 \times 6} + \frac{24}{10 \times 9 \times 8 \times 7} \right] \\
 &= \frac{1}{10} + \frac{1}{18} + \frac{1}{36} + \frac{6}{9 \times 8 \times 7} + \frac{1}{36 \times 7} + \frac{4}{90 \times 56} \\
 &= \frac{1}{10} + \frac{1}{18} + \frac{1}{36} + \frac{1}{84} + \frac{1}{252} + \frac{1}{90 \times 14} \\
 &= \frac{1}{10} + \frac{1}{12} + \frac{1}{84} + \frac{1}{252} + \frac{1}{1260} \\
 &= \frac{127}{1260} + \frac{8}{84} + \frac{1}{252} \\
 &= \frac{127}{1260} + \frac{2}{21} + \frac{1}{252} = \frac{254 + 240 + 10}{2520} = \frac{504}{2520} = \frac{1}{5}
 \end{aligned}$$

2. If S is the set of values of  $\lambda, \mu$  for which  $\vec{a} = \lambda\hat{i} - \hat{j} + \hat{k}$ ,  $\vec{b} = \hat{i} + 2\hat{j} + \mu\hat{k}$  and  $\vec{c} = 3\hat{i} - 4\hat{j} + 5\hat{k}$  are coplanar and  $\lambda - \mu = 5$  then find  $\sum_{\lambda, \mu \in S} 80(\lambda^2 + \mu^2)$

Ans. (2290)

Sol. 
$$\begin{vmatrix} \lambda & -1 & 1 \\ 1 & 2 & \mu \\ 3 & -4 & 5 \end{vmatrix} = 0$$

$$\lambda(10+4\mu) + 1(5-3\mu) + 1(-4-6) = 0$$

$$10\lambda + 4\lambda\mu + 5 - 3\mu - 10 = 0$$

$$10\lambda + 4\lambda\mu - 3\mu = 5 \dots\dots(i)$$






And  $\lambda = 5 + \mu \dots\dots(ii)$

**Resonance Eduventures Ltd.**

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

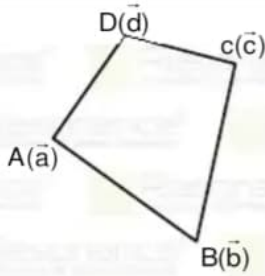
Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 |  7340010333 |  facebook.com/ResonanceEdu |  twitter.com/ResonanceEdu |  www.youtube.com/resowatch |  blog.resonance.ac.in







$$\Rightarrow \text{P.V of F are } \left( \frac{\vec{b} + \vec{d}}{2} \right)$$

$$\begin{aligned} (\vec{AB} - \vec{BC}) + (\vec{AD} - \vec{DC}) &= (\vec{b} - \vec{a}) - (\vec{c} - \vec{b}) + (\vec{d} - \vec{a}) - (\vec{c} - \vec{d}) \\ &= 2\vec{b} - 2\vec{a} - 2\vec{c} + 2\vec{d} \\ &= 2(\vec{b} + \vec{d}) - 2(\vec{a} + \vec{c}) \\ &= 4 \left[ \left( \frac{\vec{b} + \vec{d}}{2} \right) - \left( \frac{\vec{a} + \vec{c}}{2} \right) \right] = 4 \vec{EF} \end{aligned}$$

7. Mean of 50 observation is 10 and standard deviation is 8 but one observation 50 is misread as 40. then correct variance. is  
 (1) 171.8                                      (2) 172.8                                      (3) 192.4                                      (4) 164.5

Ans. (1)

Sol.  $\frac{\sum_{i=1}^{50} x_i}{50} = 10 \Rightarrow \sum x_i = 500$

correct  $\sum x_i = 500 - 40 + 50 = 510$

$$\frac{\sum x_i^2}{50} - (10)^2 = 64$$

$$\frac{\sum x_i^2}{50} = 164$$

$$\sum x_i^2 = 8200$$

$$\begin{aligned} \text{Correct } \sum x_i^2 &= 8200 - 40^2 + 50^2 \\ &= 8200 + 900 \\ &= 9100 \end{aligned}$$

$$\text{Correct variance } \sigma^2 = \frac{\sum x_i^2}{50} - (\bar{x})^2$$

$$\begin{aligned} &= \frac{9100}{50} - \left( \frac{510}{50} \right)^2 \\ &= 182 - 10.20 \\ &= 171.8 \end{aligned}$$

8. A person forget PIN of ATM card. PIN has four digits and all digits are different. Greatest digit in PIN is 7. Sum of first two digits of PIN is equal to sum of last two digits of PIN, then maximum number of unsuccessful attempts is  
 (1) 72                                      (2) 36                                      (3) 71                                      (4) 18

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | 7340010333 | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/resowatch](https://www.youtube.com/resowatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)

**Ans. (3)**

**Sol.** Let the correct ATM PIN is abcd. (a,b,c,d ∈ digits) such that  $a + b = c + d$

Let maximum {a, b} = 7 ⇒ a + b can take 7, 8, 9, 10, 11

(0, 7) a + b = 7 ⇒ c + d = 7 case (1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1)

(1, 7) a + b = 8 ⇒ c + d = 8 case (2, 6), (3, 5), (5, 3), (6, 2)

(2, 7) a + b = 9 ⇒ c + d = 9 case (3, 6), (4, 5), (5, 4), (6, 3)

(3, 7) a + b = 10 ⇒ c + d = 10 case (4, 6), (6, 4)

(4, 7) a + b = 12 ⇒ c + d = 11 case (5, 6), (6, 5)

Hence total Number of allow = (18)

Now a, b can be in charged by 2 method and in place of a, b we can be take c, a also.

So total number of attempt =  $18 \times 2 \times 2 = 72$

So maximum number of unsuccessful attempt =  $72 - 1 = 71$

**9.**  $f(x) = \text{maximum} \{1 + x + [x], x + 2, x + 2[x]\}$   $0 \leq x \leq 2$ .

If number of non-differentiability point is 'b' and number of point of discontinuity is 'a' then a + b is equal to (where [.] denotes G.I.F)

(1) 2

(2) 4

(3) 3

(4) 1

**Ans. (1)**

**Sol.**  $f(x) = \text{maximum} \{1 + x + [x], x + 2, x + 2[x]\}$

$$= \begin{cases} x + 2 & 0 \leq x < 2 \\ 6 & x = 2 \end{cases}$$

f(x) is discontinuous and non-differentiable

at  $x = 2$  only

⇒ a = 1, b = 1

a + b = 2

**10.** Let  $f(x) = \log(4x^2 + 11x + 9) + \sin^{-1}(4x + 3) + \cos^{-1}\left(\frac{10x + 6}{3}\right)$  and domain of f(x) is  $[\alpha, \beta]$  us equal to

(1) 2

(2) 3

(3) 4

(4) 6

**Ans. (3)**

**Sol.**  $4x^2 + 11x + 9 > 0$  and  $-1 \leq 4x + 3 \leq 1$  and  $-1 \leq \frac{10x + 6}{3} \leq 1$

$D < 0$

$-4 \leq 4x \leq -2$

$-3 \leq 10x + 6 \leq 3$

So  $x \in \mathbb{R}$

$-1 \leq x \leq -\frac{1}{2}$

$-\frac{9}{10} \leq x \leq -\frac{3}{10}$

So Domain of f(x) is  $x \in \left[-\frac{9}{10}, -\frac{1}{2}\right]$

$$\text{Now } |10(\alpha - \beta)| = \left|10\left(-\frac{9}{10} + \frac{1}{2}\right)\right| = |-9 + 5| = 4$$

**11.** The negation of the statement

A :  $p \wedge (q \wedge (\sim p \vee q))$  is

(1)  $p \wedge \sim q$

(2)  $\sim p \wedge q$

(3)  $\sim p \vee \sim q$

(4)  $\sim p \wedge q$

**Ans. (3)**

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No.: +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | 7340010333 | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/resowatch](https://www.youtube.com/resowatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)

**Sol.**  $p \wedge (q \wedge (\sim p \vee q))$

$$\begin{aligned} &\equiv q \wedge (p \wedge (\sim p \vee q)) \\ &\equiv q \wedge (p \wedge \sim p) \vee (p \wedge q) \\ &\equiv q \wedge (c \vee (p \wedge q)) \\ &\equiv q \wedge (p \wedge q) \\ &\equiv (p \wedge q) \end{aligned}$$

Hence negation of the above statement is  $(\sim p \vee \sim q)$

12. The value of  $\left(\frac{1}{2} - \frac{1}{3}\right) + \left(\frac{1}{2^2} + \frac{1}{2 \cdot 3} + \frac{1}{3^2}\right) + \left(\frac{1}{2^3} + \frac{1}{2^2 \cdot 3} + \frac{1}{2 \cdot 3^2} + \frac{1}{3^3}\right) + \dots = \frac{\alpha}{\beta}$  (when  $\alpha, \beta$  are coprime) the value of  $(\alpha + \beta)$  is equal to  
 (1) 2                      (2) 3                      (3) 5                      (4) 7

**Ans.** (4)

**Sol.** Given =  $\left\{ \left(\frac{1}{2} - \frac{1}{3}\right) + \left(\frac{1}{2^2} + \frac{1}{2 \cdot 3} + \frac{1}{3^2}\right) + \left(\frac{1}{2^3} + \frac{1}{2^2 \cdot 3} + \frac{1}{2 \cdot 3^2} + \frac{1}{3^3}\right) + \dots \right\} - \frac{2}{3}$

let  $x = \frac{1}{2}$  &  $y = \frac{1}{3}$

$$= \left\{ (x+y) + (x^2+xy+y^2) + (x^3+x^2y+xy^2+y^3) + \dots \right\} - \frac{2}{3}$$

$$= \frac{(x-y)}{(x-y)} \left\{ (x+y) + (x^2+xy+y^2) + (x^3+x^2y+xy^2+y^3) + \dots \right\} - \frac{2}{3}$$

$$= \frac{(x^2+x^3+x^4+\dots) - (y^2+y^3+y^4+\dots)}{x-y} - \frac{2}{3}$$

$$= \frac{\left(\frac{x^2}{1-x}\right) - \left(\frac{y^2}{1-y}\right)}{x-y} - \frac{2}{3}$$

put  $x = \frac{1}{2}$  and  $y = \frac{1}{3}$

we get  $\frac{\alpha}{\beta} = \frac{4}{3}$

So  $\alpha + \beta = 7$

13. A plane is passes through the points A(1,1,1), B(-2,3,2) and C(0,3,0) and line  $\frac{x-1}{-2} = \frac{y+2}{-1} = \frac{z}{4}$  intersect this plane at point P, then distance of P from origin is  
 (1)  $\sqrt{341}$                       (2)  $\sqrt{241}$                       (3)  $\sqrt{131}$                       (4)  $\sqrt{347}$

**Ans.** (1)

**Sol.** Equation of plane is

$$\begin{vmatrix} x-0 & y-3 & z-0 \\ 1-0 & 1-3 & 1-0 \\ -2-0 & 3-3 & 2-0 \end{vmatrix} = 0$$

$$\begin{vmatrix} x & y-3 & z \\ 1 & -2 & 1 \\ -2 & 0 & 2 \end{vmatrix} = 0$$

$$x(-4-0) - (y-3)(2+2) + z(0-4) = 0$$

## Resonance Eduventures Ltd.

**Reg. Office & Corp. Office :** CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

**Ph. No.:** +91-744-2777777, 2777700 | **FAX No.:** +91-022-39167222

**To Know more :** sms RESO at 56677 | **Website :** www.resonance.ac.in | **E-mail :** contact@resonance.ac.in | **CIN :** U80302RJ2007PLC024029

**Toll Free :** 1800 258 5555 | **7340010333** | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/resowatch](https://www.youtube.com/resowatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)

$$\begin{aligned}
 -4x - 4y + 12 - 4z &= 0 \\
 x + y + z &= 3 \dots\dots\dots(1) \\
 \text{Let point P is } (1 - 2\lambda, -2 - \lambda, 4\lambda) \\
 1 - 2\lambda - 2 - \lambda + 4\lambda &= 3 \\
 \lambda &= 4 \\
 \text{So P}(-7, -6, 16) \\
 \text{Distance OP} &= \sqrt{49 + 36 + 256} = \sqrt{341}
 \end{aligned}$$

14. If  $\int_0^1 \frac{dx}{(5+2x-2x^2)(1+e^{2-4x})} = \frac{1}{\alpha} \log\left(\frac{\alpha+1}{\beta}\right)$  find  $\alpha^4 - \beta^4$

Ans. (21)

Sol.  $I = \int_0^1 \frac{dx}{(5+2x-2x^2)(1+e^{2-4x})} \dots\dots\dots(1)$

$$I = \int_0^1 \frac{dx}{[5+2(1-x)-2(1-x)^2][1+e^{2-4(1-x)})}$$

$$I = \int_0^1 \frac{dx}{(5-2x+4x-2x^2)(1+e^{-2+4x})}$$

$$I = \int_0^1 \frac{dx}{(5+2x-2x^2)\left(1+\frac{1}{e^{2-4x}}\right)}$$

$$I = \int_0^1 \frac{e^{2-4x}}{(5+2x-2x^2)(1+e^{2-4x})} dx \dots\dots\dots(2)$$

From (1) and (2)

$$2I = \int_0^1 \frac{dx}{(5+2x-2x^2)}$$

$$2I = \frac{1}{2} \int_0^1 \frac{dx}{\left(\frac{5}{2} + x - x^2\right)} = \frac{1}{2} \int_0^1 \frac{dx}{\frac{11}{4} - \left(x - \frac{1}{2}\right)^2}$$

$$2I = \frac{1}{2} \cdot \frac{1}{2\sqrt{\frac{11}{4}}} \left[ \ln \left| \frac{\frac{\sqrt{11}}{2} + x - \frac{1}{2}}{\frac{\sqrt{11}}{2} - x + \frac{1}{2}} \right| \right]_0^1$$

So  $I = \frac{1}{\sqrt{11}} \ln \left( \frac{\sqrt{11}+1}{\sqrt{11}-1} \right)$

Hence  $\alpha = \sqrt{11}, \beta = \sqrt{11}-1$   
 $\Rightarrow \alpha^4 - \beta^4 = 121 - 100 = 21$

15. Let  $A = \{x : x = 3^n - 3 \text{ is a multiple of } 7, 10 \leq n \leq 100\}$  then number of elements in the set A is equal to

Ans. 15

Sol.  $3^n - 3 \text{ div by } 7. \Rightarrow 3^n = 7\lambda + 3$   
 $\Rightarrow 3^n \equiv 3 \pmod{7} \text{ form}$   
 Now  $\Rightarrow 3^1 \equiv 3 \pmod{7}$   
 $\Rightarrow 3^2 \equiv 2 \pmod{7}$   
 $\Rightarrow 3^3 \equiv 6 \pmod{7}$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005  
 Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029  
 Toll Free : 1800 258 5555 | 7340010333 | facebook.com/ResonanceEdu | twitter.com/ResonanceEdu | www.youtube.com/resowatch | blog.resonance.ac.in

$$\Rightarrow 3^4 \equiv 4 \pmod{7}$$

$$\Rightarrow 3^5 \equiv 5 \pmod{7}$$

$$\Rightarrow 3^6 \equiv 1 \pmod{7}$$

$$\Rightarrow 3^7 \equiv 3 \pmod{7}$$

So we can say that  $3^n - 3$  is divisible by 7 iff  $n = 1, 7, 13, 19, 25, \dots$

as  $10 \leq n \leq 100$

$\Rightarrow n = 13, 19, 25, 31, \dots, 97$

Hence number of element in set A is 15

16. Matrix A having order m such that  $|A| = (m)^{-n}$  then value of  $|n \text{ adj}(\text{adj} mA)| =$  \_\_\_\_\_.

(1)  $n^m (n)^{(m-n)(m-1)^2}$

(2)  $n^m (m)^{(n-m)(m-1)^2}$

(3)  $m^n (n)^{(m-n)(m-1)^2}$

(4)  $n^m (m)^{(m-n)(m-1)^2}$

Sol.  $|A| = m^{-n}$   
 $|n \text{ adj}(\text{adj} mA)| = n^m |\text{adj}(\text{adj} mA)|$   
 $= n^m |mA|^{(m-1)^2}$   
 $= n^m m^{m(m-1)^2} |A|^{(m-1)^2}$   
 $= n^m m^{m(m-1)^2} m^{-n(m-1)^2}$   
 $= n^m m^{(m-n)(m-1)^2}$

17. Number of common tangents of circles  $x^2 + y^2 - 13x - 15y + 13 = 0$  and  $x^2 + y^2 - 6x - 6y - 7 = 0$  is

(1) 3

(2) 4

(3) 2

(4) 1

Ans. (3)

Sol.  $C_1\left(\frac{13}{2}, \frac{15}{2}\right), r_1 = \sqrt{\frac{169}{4} + \frac{225}{4} - 13} = \sqrt{\frac{169+225-52}{4}} = \sqrt{\frac{342}{4}} \approx 9.2$

$C_2(3, 3), r_2 = \sqrt{9+9+7} = \sqrt{25} = 5$

$C_3 C_2 = \sqrt{\left(\frac{13}{2} - 3\right)^2 + \left(\frac{15}{2} - 3\right)^2} = \sqrt{\frac{49}{4} + \frac{81}{4}} = \sqrt{\frac{130}{4}} = \sqrt{\frac{342}{2}} = 5.7$

Hence  $r_1 - r_2 < C_1 C_2 < r_1 + r_2$

So number of common tangents

18. If  $(a+bx+cx^2)^{10} = \sum_{i=0}^{20} p_i x^i$  and  $p_1 = 20, p_2 = 240$  then value of  $2(a+b+c)$  is equal to (where  $a, b, c, \in \mathbb{N}$ )

(1) 18

(2) 12

(3) 16

(4) 10

Ans. (1)

Sol. general term =  $\frac{10!}{r_1! r_2! r_3!} a^{10-r_1-r_2-r_3} (bx)^{r_2} (cx^2)^{r_3}$

Coefficient of  $x^1 = p_1 = \frac{10!}{9! 1! 0!} a^9 b = 20$

$a^9 b = 2 \dots \dots (1)$

Coefficient of  $x^2 = p_2 = \frac{10!}{8! 2! 0!} a^8 b^2 + \frac{10!}{9! 0! 1!} a^9 c = 240$

$45 a^8 b^2 + 10 a^9 c = 240$

$9 a^8 b^2 + 2 a^9 c = 48 \dots \dots (2)$

By (1)  $a, b \in \mathbb{N} \Rightarrow a = 1, b = 2$

By (2)  $c = 6$

Hence  $2(a+b+c) = 18$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

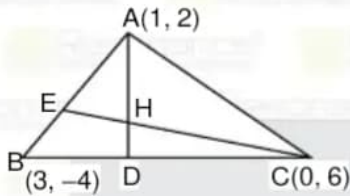
Toll Free : 1800 258 5555 | 7340010333 | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/resowatch](https://www.youtube.com/resowatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)



19. Orthogocentre of a triangle having vertices as A (1, 2), B(3, -4) and C(0, 6) is

- (1) (-129, -37)      (2) (7, 3)      (3) (129, 37)      (4) (-37, -129)

Ans. (1)



Sol.

$$m_{BC} = \frac{6 + 4}{0 - 3} = -\frac{10}{3}$$

Equation of altitude AD is

$$y - 2 = \frac{3}{10} (x - 1)$$

$$3x - 10y + 17 = 0 \quad \dots \quad (1)$$

$$m_{AB} = \frac{2 + 4}{1 - 3} = -3$$

Equation of altitude CE is

$$y - 6 = \frac{1}{3} (x - 0)$$

$$x - 3y + 18 = 0 \quad \dots \quad (2)$$

Point of intersection of both altitudes is

$$H(-129, -37)$$

20. Area of region bounded by curve  $2y^2 = 3x$ , line  $x + y = 3$  and  $y = 0$ , excluded area of circle  $(x - 3)^2 + y^2 =$

2 and above x-axis is A then the value of  $4(\pi + 4A)$  is equal to

- (1) 21      (2) 28      (3) 42      (4) 49

Ans. (3)

Sol.

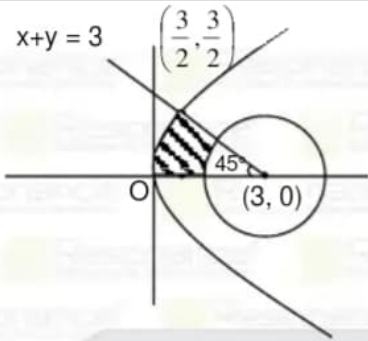
## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 7340010333 facebook.com/ResonanceEdu twitter.com/ResonanceEdu www.youtube.com/resowatch blog.resonance.ac.in



By solving

$$x + y = 3 \text{ with } 2y^2 = 3x$$

$$\text{We have } x = \frac{3}{2} \text{ \& } y = \frac{3}{2}$$

So required area

$$= \int_0^{3/2} \sqrt{\frac{3}{2}} x \, dx + \int_{3/2}^3 (3-x) \, dx$$

-area of sector of circle

$$= \sqrt{\frac{3}{2}} \left. \frac{x^{3/2}}{3/2} \right|_0^{3/2} + \frac{1}{2} \left( \frac{3}{2} \right) \left( -\frac{3}{2} \right) - \frac{\pi}{4} \left( \frac{\sqrt{2}}{2} \right)^2$$

$$A = \frac{3}{2} + \frac{9}{8} - \frac{\pi}{4} = \frac{21-2\pi}{8}$$

$$\Rightarrow 4(\pi + 4A) = 42$$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | 7340010333 | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/resowatch](https://www.youtube.com/resowatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)