i'u i= dk Cy fiV

d{kk & 10 oh
fo"k; & xf.kr

le; & 3 ?kV **i.kkd & 100**

b-Ø-	bdkb	bdkb ij vkofVr vd	oLrfu"B i'u	vdokj vU; i'uk dh l[;k			
			01 vd	04 vd	05 vd	06 vd	dy l[;k
1	nk pj jkf'k;k dk jf[kd lehdj.k	10	2	2	&	&	**2**
2	cgin ,o ifje; 0;td	07	2	&	1	&	**1**
3	vuikr ,o lekuikr	05	1	1	&	&	**1**
4	ox lehdj.k	10	1	1	1	&	**3**
5	Okkf.kfT;d xf.kr	08	3	&	1	&	**1**
6	le:i f=Hkt	08	2	&	&	1	**1**
7	oÙk	10	4	&	&	1	**1**
8	jpuk,	05	&	&	1	&	**1**
9	f=dk.kfefr	10	5	&	1	&	**1**
10	Åpkb ,o njh	05	1	1	&	&	**1**
11	{k=fefr	10	2	2	&	&	**2**
12	lkf[;dh] ikf;drk] dfMdk] iujkofRr	12	2	1	&	1	**2**
	dy i'u		**01**	**08**	**05**	**03**	**17**
	dy vd		25	32	25	18	**100**

fun'k ZkA
1- lHkh i'u gy djuk gA
2- iR;d i'u ij fu/kkfjr vd mud lEe[k n'kk; gA
3- i'u Ø- 1 e oLrfu"B idkj d 25 i'u gkxA iR;d i'u ij 1 vd fu/kkfjr gA bu i'uk e lgh fodYi puuk] fjDr LFkkuk dh ifr] rFkk lgh tkMh bR;kfn idkj d i'uk dk leko'k fd;k gA
4- i'u Ø- 2 l 17 rd lHkh i'uk e vkrfjd fodYi fn;k tkuk gA iR;d i'uk e fodYi leku bdkb ,o leku Lrj d gA
5- i'uk dk dfBukb Lrj] ljy 50 %] lekU; 35 % ,o dfBu 15 % fn;k x;k gA

vkn'k i’u i=

fo"k; & xf.kr

d{kk & 10 oh

¼MATHEMATICS½

Hindi and English Versions

Time: 3 hours Maximum marks: 100

fun'k &

¼i½ lHkh ç'u vfuok; gA

¼ii½ ç'u&i= e fn; x; fun'k lko/kkuhiod i<dj ç'uk d mÙkj fyf[k,A

¼iii½ ç'u&i= e nk [k.M fn; x; g & [k.M ^v* vkj [k.M ^c*A

¼iv½ [k.M ^v^ e ç'u Ø- 1 e oLrfu"B çdkj d ç'u fn; x; gA fun'kkulkj gy dhft ,A

¼v½ [k.M ^c^ e ç'u Øekd 2 l 17 rd vkUrfjd fodYi fn; x; gA

¼vi½ tgk vko';d gk] LoPN j[kkfp= cukb;A

¼vii½ çR;d ç'u d fy; vkofVr vd mld lEe[k vfdr gA

Instructions: -

(i) All questions are compulsory.

(ii) Read the instructions of question paper carefully and write their answers.

(iii) There are two sections – Section ‘A’ and ‘B’ in the question paper.

(iv)Question No.1 is objective type questions in Section ‘A’. Do as directed.

(v) Internal options are given in Que. Nos.2 to 17 in section B.

(vi) Draw neat and clean diagrams wherever required.

(vii) Marks allotted to each question are mentioned against the question.

[k.M & ¼v½ Section – (A)

oLrfu"B i'u (Objective Type Questions)

1(A) lgh fodYi pudj viuh mRrj ifLrdk e fyf[k, % (1×5 = 5)

Choose the correct option and write in your Answer Book.

(i) nk ;xir jf[kd leh dj.kk $a_1x+b_1y+c_1=0$ rFkk $a_2x+b_2y+c_2=0$ d vUrr% vud gy d fy, çfrc/k g &

(a) $\frac{a_1}{a_2}=\frac{b_2}{b_2}\neq\frac{c_1}{c_2}$ (b) $\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}$

(c) $\frac{a_1}{a_2}\neq\frac{b_1}{b_2}$ (d) $\frac{a_1}{a_2}=\frac{b_1}{b_2}$

The system of two simultaneous linear equations $a_1x+b_1y+c_1=0$ and $a_2x+b_2y+c_2=0$ have the infinite solution, if

(a) $\frac{a_1}{a_2}=\frac{b_2}{b_2}\neq\frac{c_1}{c_2}$ (b) $\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}$

(c) $\frac{a_1}{a_2}\neq\frac{b_1}{b_2}$ (d) $\frac{a_1}{a_2}=\frac{b_1}{b_2}$

(ii) jf[kd leh dj.k x+2y=5 e ;fn x=-1 gk rk y dk eku g&

(a) 3 (b) -3 (c) 2 (d) -2

In a linear equation x+2y=5 if x=-1, then the value of y is:

(a) 3 (b) -3 (c) 2 (d) -2

(iii) $\frac{x^2-9}{x-3}$ dk ljyre :i gA

(a) x-3 (b) x+3 (c) x+9 (d) x-9

Simplest form of $\frac{x^2-9}{x-3}$ is :

(a) x-3 (b) x+3 (c) x+9 (d) x-9

(iv) 7, 9, 21 dk prFkkuikrh gkxk %&

(a) 7 (b) 9 (c) 21 (d) 27

The Fourth proportional to 7, 9, 21

(a) 7 (b) 9 (c) 21 (d) 27

(v) ox lehdj.k $ax^2+bx+c=0$ d eyk dk ;kxQy g

(a) $\frac{a}{b}$ (b) $-\frac{b}{a}$ (c) $\frac{c}{a}$ (d) $\frac{c}{b}$

Sum of roots of quadratic equation $ax^2+bx+c=0$ is

(a) $\frac{a}{b}$ (b) $-\frac{b}{a}$ (c) $\frac{c}{a}$ (d) $\frac{c}{b}$

1(B) fjDr LFkkuk dh ifr dhft,& (1×5=5)

¼i½ ifje; 0;td $\frac{x^3-7x^2+3}{x^4-2x+1}$ d v'k dh ?kkr ---------- gA

¼ii½ pØof) C;kt dk eku lk/kkj.k C;kt l ---------- gkrk gA

¼iii½ ledk.k f=Hkt e d.k lcl ---------- Hktk gkrh gA

¼iv½ fdlh oÙk dh lcl cMh thok ---------- dgykrh gA

¼v½ pj 2]4]5]8]10 dh ekf/;dk ---------- gA

Fill up the blanks –

(i) The degree of numerator of rational expression $\frac{x^3-7x^2+3}{x^4-2x+1}$ is .....

(ii) Compound interest is ..... then simple interest.

(iii) In a right triangle, the hypotenuse is the ..... side.

(iv) The longest chord of the circle is called .....

(v) The median of the nariate 2,4,5,8,10 is .....

1(C) LrHk v d fy, LrHk c l pudj lgh tkfM;k cukb;& (1×5=5)

LrHk ¼v½	LrHk ¼c½
(i) Sin(90-θ)	(1) $Sec^2\theta$
(ii) $1+tan^2\theta$	(2) Cosθ
(iii) Cos45º	(3) 1

(iv) Sin60º+Cos60º (4) $\frac{1}{\sqrt{2}}$

(v) $Sin^2\theta+Cos^2\theta$ (5) $\frac{\sqrt{3}+1}{2}$,

(6) $\cot\theta$

(7) $\operatorname{cosec}\theta$

Make correct pair for Column A choosing from Column B:

Column 'A'	**Column 'B'**
(i) $\sin(90-\theta)$	(1) $Sec^2\theta$
(ii) $1+\tan^2\theta$	(2) $Cos^2\theta$
(iii) Cos45º	(3) 1
(iv) Sin60º+Cos60º	(4) $\frac{1}{\sqrt{2}}$
(v) $Sin^2\theta+Cos^2\theta$	(5) $\frac{\sqrt{3}+1}{2}$,
	(6) $\cot\theta$
	(7) $\operatorname{cosec}\theta$

(D) lR;@vlR; fyf[k,& (1×5=5)

(i) fdlh ?kVuk dh çkf;drk 1 l vf/kd gk ldrh gA

(ii) fdlh pØh; prHkt d lEe[k dk.kk dk ;kx 180º gkrk gA

(iii) fdlh ckº; fcUn l oÙk ij [khph xb Li'k j[kkvk dh vf/kdre l[;k 4 gkrh gA

(iv) v)oÙk ij cuk dk.k ledk.k gkrk gA

(v) ,d ehukj dh Nk;k$15\sqrt{3}$ g ;fn ehukj dh Åpkbz 15eh- g rk l; dk mUu;k'k dk.k 30º dk gkxkA

Write true of false:

(i) The probability of on event may be greater then 1.

(ii) The sum of opposite angles of a cyclic quadrilateral is 180º.

(iii) Maximum number tangents that can be drawn from on external point are 4.

(iv) An angle in a semi circle is right angle.

(v) The shadow of a tower is $15\sqrt{3}$ m. If the height of the tower is 15m. Then the sum's angle of elevation is 30º.

1(E) fuEufyf[kr ç'uk d mÙkj ,d okD; e nhft,& (1×5 = 5)

Choose the correct option and write in your Answer Book.

¼i½ pØof) C;kt ,o ey/ku d ;kx dk D;k dgr g\

¼ii½ ?kkrkjk dh nj /kukRed gkrh g ;k _.kkRed gkrh g\

¼iii½ ;fn ,d f=Hkt d rhuk dk.k nlj f=Hkt d rhuk lxr dk.kk d cjkcj gk rk o f=Hkt D;k dgykr g\

¼iv½ v) xky d vk;ru dk l= fyf[k,\

¼v½ cyu d oØi"B dk l= fyf[k,\

Answer the following questions in one word or in one sentence-

(i) What we say the sum of compound interest and principal?

(ii) The rate of Depreciation is either positive or negative?

(iii) If all the three angles of a triangle are equal to there correspond angles of other triangle then triangles are called what?

(iv) Write the volume of semi sphere?

(V) Write the curved surface of cylinder?

[k.M ¼c½ Section (B)
vfr y?kmÙkjh; ç'u
(Very short answer type Questions)

2- lehdj.k fudk; dk foykiu fof/k }kjk ljy dhft,&¼4 vd½

x+2y=-1 .....(i)

2x-3y=12 .....(ii)

Solve the following system of equation by elimination method.

2x+2y=-1 .....(i)

2x-3y=12 .....(ii)

vFkok ¼OR½

lehdj.k fudk; dk çfrLFkkiu fof/k l ljy dhft,&

2x-y=3 .....(i)

4x-y=5 .....(ii)

Solve the following system of equation by substitution method.

2x-y=3 .....(i)

4x-y=5 .....(ii)

3- nk l[;kvk dk ;kx 7 gA ;fn budk ;kx bud vUrj dk lkr xuk gk rk l[;k, Kkr dhft,A ¼4 vd½

The sum of two numbers is 7. If the sum of these numbers is seven times greater than its difference. Then find out of the numbers.

vFkok ¼OR½

'a' d fdl eku d fy, 2x+10y=14, 4x+20y+a=0 likrh j[kk, çnf'kr djxk\

For what value of "a" 2x+10y=14 and 4x+20y+a=0 will represent coincident line.

4- ;fn $\frac{x}{b+c}=\frac{y}{c+a}=\frac{z}{a+b}$ gk rk fl) dhft, fd& ¼4 vd½

(b-c)x+(c-a)y+(a-b)z=0

If $\frac{x}{b+c}=\frac{y}{c+a}=\frac{z}{a+b}$ then prove that: (b-c)x+(c-a)y+(a-b)z=0

vFkok ¼OR½

11] 20] 26 vkj 50 e l D;k ?kVk;k tk;o fd 'k"kQy lekuikrh gk tko\

What should be subtracted from each of 11,20,26 and 50 as to make them proportional.

5- ox lehdj.k $x^2-4x+3=0$ dk x.ku[k.M fof/k l gy dhft ,A ¼4 vd½

Solve the quadratic equation $x^2-4x+3=0$ by factor method.

vFkok ¼OR½

;fn ox lehdj.k $ax^2+bx+c=0$ d ey α, β gk rk $\frac{1}{\alpha}+\frac{1}{\beta}$ dk eku Kkr dhft ,\

If α, β are the roots of quadratic equation $ax^2+bx+c=0$, then find the value of $\frac{1}{\alpha}+\frac{1}{\beta}$.

6- ;fn fdlh le; ,d ehukj dh Åpkb ,o mldh Nk;k dh yEckb leku gk rk ml le; l; dk mUu;u dk.k D;k gkxk\ ¼4 vd½

Find the angle of elevation of the sum when the length of the shadow of a tower is equal to its heitht.

vFkok ¼OR½

,d Hkou d ikn l 25 ehVj dh njh l Hkou d f'k[kj dk mUu;u dk.k 45º g rk Hkou dh Åpkb Kkr dhft ,\

Form a point 25m away from the foot of the building, the angle of elevation of the top of the building is 45º. Find the height of the building.

7- ,d ?ku dh yEckb] pkMkb ,o Åpkb Øe'k% 12 leh-] 11 leh- vkj 10 leh- gA ?kukHk dk i"Bh; {k=Qy Kkr dhft ,A ¼4 vd½

The length, breadth and height of a cuboids is 12cm, 11cm. and 10cm. Then find its surface area.

vFkok ¼OR½

;fn *a* yEckb] *b* pkMkb vkj *c* Åpkb oky ?kukHk dk vk;ru *V* gk rFkk lEi.k i"B s gk rk fl) dhft, fd& $\frac{1}{v}=\frac{2}{S}\left(\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right)$

If 'V' is a volume of Cuboids' whose length is 'a', breadth is 'b' and height is 'c' and 'S' is its surface area then proves that

$$\frac{1}{v}=\frac{2}{S}\left(\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right)$$

8- ,d ckYVh d fljk dh f=T;k, 28 l-eh- o 7 l-eh- gA ;fn ckYVh dh Åpkb 45 l-eh- gk rk ckYVh dk vk;ru Kkr dhft,\ ¼4 vd½

The radii of the ends of a bucket are 28cm. and 7cm. respectively. If the height of the bucket is 45cm, then find the volume of the bucket.

vFkok ¼OR½

,d [kk[ky xky dh ckgjh vkj Hkhrjh f=T;k, Øe'k% 4 l-eh- vkj 2 l-eh- g] xky dh /kkr dk vk;ru Kkr dhft,\

External and eternal radii of a spherical shell are 4cm. and 2cm respectively, find the volume of metal used in spherical shell.

9- ,d ikl dk mNkyu ij fo"ke vd vku dh çkf;drk Kkr dhft,\ ¼4 vd½

In a single throw of die, find the probability of getting an odd number.

vFkok ¼OR½

,d flDd d mNkyu ij fpÙk vkj iÍ ,d lkFk vku dh çkf;drk Kkr dhft,\

In a single throw of coin, find the probability of getting a head and a tail at a time.

10- ;fn $A=\frac{3x+2}{x^2-16}$ vkj $B=\frac{x-5}{(x+4)^2}$ rk A+B dk eku Kkr dhft,A ¼5 vd½

If A = $A=\frac{3x+2}{x^2-16}$ and $B=\frac{x-5}{(x+4)^2}$ then, find the value of (A+B)

vFkok ¼OR½

$A=\frac{x-3}{x-4}$ rFkk $B=\frac{x^2-5x+4}{x^2-2x-3}$ dk x.kuQy Kkr dj ifj.kke dk x dh U;ure ?kkrk e 0;Dr dhft,A

Find the product of $A=\frac{x-3}{x-4}$ and $B=\frac{x^2-5x+4}{x^2-2x-3}$, write result in lowest power of x.

11. l= fof/k l lehdj.k $x^2-5x-6=0$ dk gy dhft,\ ¼5 vd½

Solve the following equations by formula method: $x^2-5x-6=0$

vFkok ¼OR½

,d l[;k vkj mld 0;qRØe dk ;ksx $\frac{50}{7}$ gk rk l[;k Kkr dhft,A

The sum of a number and its reciprocal is $\frac{50}{7}$, then find the number.

12. 2000 :i;s dk 4% okf"kd C;kt dh nj l 3 o"k dk pØof) C;kt Kkr dhft;A ¼5 vd½

Find the compound interest on Rs. 2000 at the rate of interest 4% per annum for 2 years.

vFkok ¼OR½

,d flykbZ e'khu 1600#- uxn ;k 1200#- uxn Hkxrku dj 'k"k N% eghu ckn 460 ndj feyrh g rk fd'r d vk/kkj ij C;kt dh nj dh x.kuk dhft,A

A sewing machine is available on Rs. 1600 or cash or for Rs. 1200 cash down payment and Rs. 460 to be paid after 6 months. Find the rate of interest changed under the instatement plan.

13. ml f=Hkt d ifjoÙk dh jpuk dhft, ftldh Hkt k;; 6-5 l-eh-] 7 l-eh- ,o 7-5 l-eh- gA oÙk dh f=T;k ekiA ¼5 vd½

Construct the circum circle of the triangle whose sides are 6.5cm, 7cm. and 7.5 cm. and measure its radius.

vFkok ¼OR½

f=Hkt ABC dh jpuk dhft, ftle BC= 6.5 l-eh-] ∠A=45º vkj Åpkb AD=5.5 l-eh- gA

Construct a triangle ABC, in which BC=6.5cm ∠A=45º and altitude AD=5.5cm.

14- fl) dhft,& $\sqrt{\frac{1-Sin\theta}{1+Sin\theta}} = Sec\theta - \tan\theta$ ¼5 vd½

Prove that: $\sqrt{\frac{1-Sin\theta}{1+Sin\theta}} = Sec\theta - \tan\theta$

vFkok ¼OR½

fl) dhft, $\frac{\sin(90-A)Cos(90-A)}{\tan A} = 1-\sin^2 A$

Prove that: $\frac{\sin(90-A)Cos(90-A)}{\tan A} = 1-\sin^2 A$

15- ;fn fdlh f=Hkt e dkb ljy j[kk mldh nk Hktkvk dk leku vuikr e foHkDr dj rk og rhljh Hktk d lekukUrj gkrh gA fl) dhft,A ¼6 vd½

Prove that if a line divides any two sides of a triangle in the same ratio, then the line must be parallel to the third side.

vFkok ¼OR½

,d lh<h bl rjg j[kh xb g fd mldk fupyk fljk nhokj l 5 ehVj dh njh ij g vkj mldk Åijh fljk tehu l 10 ehVj Åph f[kMdh rd tkrk gA lh<h dh yEckb fdruh gkxh Kkr dhft,A

A ladder rests against a vertical wall. Its lower end is 5 meters away from the wall and the upper end reaches a window 10 meters above the ground. Find the length of the ladder.

16- ;fn PAB ,d Nnd j[kk fdlh oÙk dk A ,o B ij çfrPNn djrh g vkj PT Li'k j[kk g rk fl) dhft, fd& $PA.PB=PT^2$ ¼6 vd½

If PAB be a secant of a circle which intersects the circle at A And B and PT be a tangent segment, then prove that: $PA.PB=PT^2$

vFkok ¼OR½

fl) dhft, fd fdlh oÙk d dUæ l thok d e/; fcUn dk feyku okyh j[kk] thok ij yEc gkrh gA

Prove that the line joining the center of a circle to the middle point of a chord is perpendicular to the chord.

17. fuEufyf[kr ckjckjrk cVu dh ek/; y?kqÙkj fof/k l Kkr dhft,A ¼6 vd½

vd	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Nk= l[;k	6	8	13	7	3	2	1

Compute the mean of the following frequency distribution table by short cut method

Marks	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Students	6	8	13	7	3	2	1

vFkok ¼OR½

fuEufyf[kr ckjckjrk cVu dh ekf/;dk Kkr dhft,&

ox vUrjky	0-20	20-40	40-60	60-80	80-100
ckjckjrk	10	17	26	22	15

Find the median of the following frequency distribution table:

Class Interval	0-20	20-40	40-60	60-80	80-100
Frequency	10	17	26	22	15

vkn'k mÙkj

xf.kr d{kk 10 oh

1 ¼A½ lgh fodYi

(i)	**(b)**	$\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}$
(ii)	**(a)**	**3**
(iii)	**(b)**	**x+3**
(iv)	**(d)**	**27**
(v)	**(b)**	$-\frac{b}{a}$

1 ¼B½ fjDr fLFkkuk dh ifr

(i)	**3**
(ii)	**vf/kd**
(iii)	**cMh**
(iv)	**0;kl**
(v)	**5**

1 ¼C½ lgh tkfM;k

(i)	**(2)**	**Cosθ**
(ii)	**(1)**	**Sec²θ**
(iii)	**(4)**	$\frac{1}{\sqrt{2}}$
(iv)	**(5)**	$\frac{\sqrt{3}+1}{2}$
(v)	**(3)**	**1**

1 ¼D½ lR;@vlR;

(i)	**vlR;**
(ii)	**lR;**
(iii)	**vlR;**
(iv)	**lR;**
(v)	**lR;**

1(E) ,d okD; e mÙkj &

¼i½ pØof) ℂ;kt ,o ey/ku d ;kx dk feJ/ku dgr gA

¼ii½ ?kukjk dh nj _.kkRed gkrh g gkrh gA

¼iii½ ;fn ,d f=Hkt d rhuk dk.k nlj f=Hkt d rhuk lxr dk.kk d cjkcj gk rk o f=Hkt le:i gkxA

¼iv½ v) xky d vk;ru dk l= $\frac{2}{3}\pi r^3$ gkxkA

¼v½ cyu d oØi"B dk l= $2\pi rl$ gkxkA

ç'u Ø- 2 dy vd 4

gy %

x+2y = -1 ..... (i)

2x-3y = 12 ..... (ii)

lehdj.k ¼i½ e 2 dk x.kk rFkk lehdj.k ¼ii½ e 1 dk x.kk dju ij

2x+4y = -2 ..... (iii)

2x-3y = 12 ..... (iv) ¼1 vd½

(-) (+) (-)

7y = -14

y = -2 ¼1 vd½

y dk eku lehdj.k ¼i½ j[ku ij

x+2(-2) = -1 ¼1 vd½

x-4 = -1

x = -1+4

x = 3 ¼1½ vd½

vr% vHkh"V gy ¼x = 3 ,o y = -2½ mÙkj ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$½ = 4 vd ikIr gkxA

ç'u Ø- 2 vFkok

gy %

2x-y = 3 ..... (i)

4x-y = 5 ..... (ii)

lehdj.k ¼i½ l

y = 2x-3 ..... (iii) ¼1 vd½

lehdj.k ¼iii½ l y dk eku lehdj.k ¼ii½ e j[ku ij

4x-(2x-3) = 5 ¼1 vd½

4x-2x+3 = 5

2x = 5-3

2x = 2

x = 1 ¼1 vd½

x dk eku lehdj.k ¼iii½ e j[ku ij

y = 2×1-3

y = 2-3

y = -1 ¼½ vd½

vr% vHkh"V gy x = 1 ,o y = -1 gA **mÙkj** ¼½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$½ = 4 vd ikIr gkxA

ç'u Ø- 3 dy vd 4

gy %

ekuk fd vHkh"V l[;k, x ,o y gA

çFke 'kr l % x+y = 7 .....(i) ¼1 vd½

f}rh; 'kr l % x+y = 7(x-y)

x+y = 7x-7y

7x-x-7y-y = 0

6x-8y = 0 .....(ii) ¼1 vd½

lehdj.k ¼i½ e 6 dk x.kk rFkk lehdj.k ¼ii½ e 1 dk x.kk dju ij

$$6x+6y = 42$$
$$6x-8y = 0$$
$$(-) \quad (+) \quad (-)$$
$$14y = 42$$
$$y = 3$$ ¼1 vd½

y dk eku lehdj.k ¼i½ j[kus ij

$$x+3 = 7$$
$$x = 7-3$$
$$x = 4$$ ¼½ vd½

vr% vHkh"V l[;k, 4 ,oa 3 gA **mÙkj** ¼½ vd½

ukV & mijkDrkuqlkj fy[k tkus ij 1$1$1$½$½ = 4 vd ikIr gksxA

ç'u Ø- 3 vFkok

gy %

fn; x; lehdj.k &

$2x+10y = 14$ ..... (i)

$4x+20y+a = 0$ ..... (ii) ¼1 vd½

mDr lehdj.kksa dh ryuk 0;kid lehdj.k $a_1x+b_1y+c_1=0$

rFkk $a_2x+b_2y+c_2=0$ l dju ij

$a_1=2, \quad b_1=10, \quad c_1=14$

$a_2=4, \quad b_2=20, \quad c_2= -a$ ¼1 vd½

lkekurh j[kus ij çnf'kr dju dk çfrc/k gksxk &

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$ ¼1 vd½

$$\frac{b_1}{b_2} = \frac{c_1}{c_2}$$

$$\frac{10}{20} = \frac{14}{-a}$$ ¼½ vd½

$$a = -28$$

vr% a dk vHkh"V eku = -28 gA ¼½ vd½

ukV & mijkDrkuqlkj fy[k tkus ij 1$1$1$½$½ = 4 vd ikIr gksxA

ç'u Ø-4 **dy vd 4**

fn;k g & $\frac{x}{b+c}=\frac{y}{c+a}=\frac{z}{a+b}=k$ ¼ekuk½

rc x = k(b+c)

y = k(c+a)

z = k(a+b) ¼1 vd½

fl) dju k g & (b-c)x+(c-a)y+(a-b)z = 0

LHS = (b-c)x+(c-a)y+(a-b)z ¼1 vd½

= (b-c)k(b+c)+(c-a)k(c+a)+(a-b)k(a+b)

= $k(b^2-c^2)+k(c^2-a^2)+k(a^2-b^2)$ ¼1 vd½

= $k(b^2-c^2+c^2-a^2+a^2-b^2)$

= k(0) ¼1½ vd½

= 0 = RHS ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$½ **=** 4 vd ikIr gkxA

ç'u Ø-4 vFkok **dy vd 4**

gy %&

ekuk çR;d e l x ?kVk;k tk;

vr% (11-x) : (20-x) :: (26-x) : (50-x) ¼1 vd½

$\frac{(11-x)}{(20-x)}=\frac{(26-x)}{(50-x)}$ ¼1 vd½

(11-x)×(50-x) = (26-x)×(20-x)

$550-11x-50x+x^2 = 520-26x-20x+x^2$ ¼1 vd½

-61x+46x = 520-550

-15x = -30 ¼1½ vd½

$x = \frac{30}{15}$

x = 2

vr% vHkh"V l[;k 2 gA ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$½ **=** 4 vd ikIr gkxA

ç'u Ø·5 dy 4 vd

gy %&

$x^2-4x+3 = 0$

$x^2-3x-x+3 = 0$ ¼1 vd½

$x(x-3)-1(x-3) = 0$

$(x-3)(x-1) = 0$ ¼1 vd½

;fn $x-3 = 0$

$X = 3$ ¼1 vd½

vkj ;fn $x-1 = 0$

$x = 1$ ¼1½vd½

vr% vHkh"V eku 1 vkj 3 gA ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$½ **=** 4 vd ikIr gkxA

ç'u Ø·5 vFkok

gy %

fn;k x;k ox lehdj.k $ax^2+bx+c=0$ g

Kkr djuk g &

$\frac{1}{\alpha}+\frac{1}{\beta} = \frac{\beta+\alpha}{\alpha.\beta}$ ¼1vd½

fdUr $\alpha+\beta = \frac{-b}{a}$ vkj $\alpha.\beta = \frac{c}{a}$ ¼1vd½

$= \frac{\frac{-b}{a}}{\frac{c}{a}}$ ¼1vd½

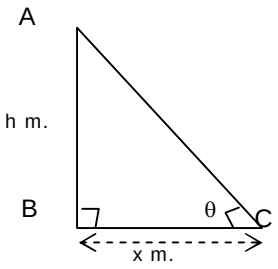
$= \frac{-b}{c}$ ¼1½ vd½

vr% vHkh"V eku $-b/c$ gA ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$½ **=** 4 vd ikIr gkxA

ç'u Ø-6 **dy 4 vd**

gy %



ekuk fd AB ehukj g ft l dh ¼1 vd½

Åpkb h ehVj rFkk

Nk;k dh yckb BC=x ehVj gA

ç'ukuqlkj h = x .....(i) ¼1 vd½

ekuk l ;qXe dk mUu;u dk.k ∠ACB=θ

ledk.k ΔABC e

$\tan\theta = \frac{AB}{BC} = \frac{h}{x}$ [fn;k gS h = x] ¼1 vd½

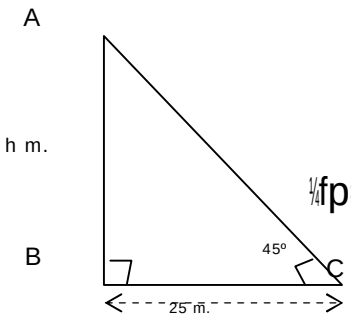
$\tan\theta = \frac{h}{x}$ = tanθ =1 θ = 45º ¼1½ vd½

vr% l ;qXe dk mUu;u dk.k gksxk 45º ¼1½ vd½

ukV & mijkDrkuqlkj fy[k tkus ij 1$1$1$½$½ **=** 4 vd ikIr gksxA

ç'u Ø- 6 vFkok **dy 4 vd**

gy %



fn;k g &

Hkou l fcUnq C dh nwjh BC= 25eh- ¼fp= 1 vd½

Hkou d f'k[kj dk mUu;u

dk.k ∠BCA = 45º ¼fn;k gS 1vd½

Kkr djuk g & Hkou dh Åpkb h

ledk.k ΔABC e] $\frac{AB}{BC} = \tan 45^\circ$ ¼1vd½

;k $\tan 45^\circ = \frac{h}{25}$

$$1 = \frac{h}{25}$$ ¼½ vd½

h = 25

vr% Hkou dh Åpkb 25 ehVjA ¼½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$½ **=** 4 vd ikIr gkxA

ç'u Ø-7 dy 4 vd

fn;k g &

?kukHk dh yEckb a =12 leh]

pkMkb b =11 leh-

Åpkb C = 10 leh- ¼1vd½

Kkr djuk g & ?kukHk dk i"Bh; {k=Qy

?kukHk dk i"Bh; {k=Qy = 2[ab+bc+ca] ¼1vd½

= 2[12×11+11×10+10×12]

= 2[132+110+120] ¼1vd½

= 2(362) ¼½ vd½

= 724 ox leh-

mÙkj ?kukHk dk i"Bh; {k=Qy 724 ox leh- gkxk ¼½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$½ **=** 4 vd ikIr gkxA

ç'u Ø-7 vFkok

fn;k g &

?kukHk dh yEckb a, pkMkb b, Åpkb C rk

?kukHk dk vk;ru V = a×b×c

?kukHk dk lEi.k i"B S = 2[ab+b+ca] ¼1vd½

fl) djuk g &

$$\frac{1}{V} = \frac{2}{S}\left[\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right]$$

RHS $= \frac{2}{S}\left[\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right]$ ¼1vd½

$= \frac{2}{S}\left[\frac{bc+ca+ab}{abc}\right]$ ¼1vd½

$= \frac{2}{S}\left[\frac{S}{2V}\right]$

$= \frac{S}{S.V}$ ¼1½ vd½

$= \frac{1}{V}$ = LHS ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1\$1\$1\$½\$½ **=** 4 vd ikIr gkxA

ç'u Ø-8 dy 4 vd

gy %

fn;k g| & ckYVh dh Åijh f=T;k r_1= 28 le-

ckYVh dh Åijh f=T;k r_2= 7 le-

ckYVh dh Åpkb h = 45 le- ¼1vd½

Kkr djuk g & ckYVh dk vk;ru ¼'kd d fNUud dk vk;ru½ ¼1vd½

ckYVh dk vk;ru $= \frac{1}{3}\pi h[r_1^2 + r_1 r_2 + r_2^2]$ ¼1vd½

$= \frac{1}{3}\times\frac{22}{7}\times 45[(28)^2 + 28\times 7 + (7)^2]$

$= \frac{330}{7}\times[784+49+196]$ ¼1½ vd½

$= \frac{330}{7}\times 1029$

= 48510 le^3-

mRrj & ckYVh dk vk;ru 48510 le^3 gkxkA ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1\$1\$1\$½\$½ **=** 4 vd ikIr gkxA

ç'u Ø-8 vFkok

gy %

fn;k g & [kk[ky xky dh ckgjh f=T;k $r_1 = 4$ leh-

[kk[ky xky dh vkUrfjd f=T;k $r_2 = 2$ leh ¼1vd½

[kk[ky xky dh /kkr dk vk;ru $= \frac{4}{3}\pi(r_1 3 - r_2 3)$ ¼1vd½

$$= \frac{4}{3} \times \frac{22}{7} \times (4^3 - 2^3)$$

$$= \frac{4}{3} \times \frac{22}{7} \times (64 - 8)$$ ¼1vd½

$$= \frac{88}{21} \times 56$$

$$= \frac{704}{3}$$ ¼1½ vd½

[kk[ky xky dh /kkr dk vk;ru = 234.5 leh-^{3} ¼yxHkx½ ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$½ **=** 4 vd ikIr gkxA

ç'u Ø-9 **dy vd 4**

gy %

,d ikl dk ,d ckj mNkyu 6 rjg d vd vk ldr gA

dy çdkjk dh l[;k = {1,2,3,4,5,6} n(S) = 6 ¼1vd½

ikl dk mNkyu ij fo"ke vd vku d lHko çdkj = {1,3,5), n(E) = 3 ¼1vd½

fo"ke vd vku dh ikf;drk $P(A) = \frac{\text{vudy çdkjk dh l[;k}}{\text{dy idkjk dh l[;k}}$ ¼1vd½

$$P(A) = \frac{n(E)}{n(S)}$$

$$P(A) = \frac{3}{6}$$ ¼1½ vd½

$$P(A) = \frac{1}{2}$$ ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$½ **=** 4 vd ikIr gkxA

ç'u Ø-9 vFkok

gy %

,d fl Dd dk mNkyu ij dy çdkj S = {H,T}

vr% n(S) = 2 ¼1vd½

fpRr ,o iÍ ,d lkFk vku d çdkj A = { }

vr% n(A) = 0 ¼1vd½

fpRr ,o iÍ ,d lkFk vku dh çk;fdrk $P(A) = \frac{n(A)}{n(s)}$ ¼1vd½

$= \frac{0}{2}$ ¼1½ vd½

= 0

mRrj & fpRr ,o iÍ ,d lkFk vku dh çk;fdrk 0 ¼'kU;½ gkxh ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1\$1\$1\$½\$½ **=** 4 vd ikIr gkxA

ç'u Ø-10 **dy 5 vd**

fn;k g & $A=\frac{3x+2}{x^2-16}$ $B=\frac{x-5}{(x+4)^2}$

Kkr djuk g & A+B ¼1vd½

gy % &

A+B $= \frac{3x+2}{x^2-16}+\frac{x-5}{(x+4)^2}$ ¼1vd½

$= \frac{(3x+2)(x+4)^2+(x-5)(x^2-16)}{(x^2-16)(x+4)^2}$ ¼1vd½

$= \frac{(3x+2)(x+4)(x+4)+(x-5)(x-4)(x+4)}{(x+4)(x-4)(x+4)^2}$

$= \frac{(x+4)[(3x+2)(x+4)+(x-5)(x-4)]}{(x+4)(x-4)(x+4)^2}$ ¼1vd½

$= \frac{[(3x+2)(x+4)+(x-5)(x-4)]}{(x-4)(x+4)^2}$

$= \frac{(3x^2+14x+8)+(x^2-9x+20)}{(x-4)(x+4)^2}$ ¼½ vd½

$= \frac{4x^2+5x+28}{(x-4)(x+4)^2}$

$= \frac{4x^2+5x+28}{x^3+4x^2-16x-64}$ ¼½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$½$½ **=** 5 vd ikIr gkxA

ç'u Ø-10 vFkok

fn;k g & $A=\frac{x-3}{x-4}$ $B=\frac{x^2-5x+4}{x^2-2x-3}$

Kkr djuk g & A.B ¼1vd½

gy &

A.B $=\frac{x-3}{x-4}\times\frac{x^2-5x+4}{x^2-2x-3}$ ¼1vd½

$= \frac{x-3}{x-4}\times\frac{x^2-4x-x+4}{x^2-3x+1x-3}$ ¼1vd½

$= \frac{x-3}{x-4}\times\frac{x(x-4)-1(x-4)}{x(x-3)+1(x-3)}$ ¼1vd½

$= \frac{x-3}{x-4}\times\frac{(x-1)(x-4)}{(x-3)(x+1)}$ ¼½ vd½

$= \frac{x-1}{x+1}$ ¼½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$½$½ **=** 5 vd ikIr gkxA

ç'u Ø-11 **dy 5 vd**

gy %

fn; x; lehdj.k $x^2-5x-6=0$ dh ryuk

vkn'k lehdj.k $ax^2+bx+c=0$ l dju ij

a = 1, b = -5, c = -6 ¼1vd½

l= $x = \frac{-b \pm \sqrt{b2-4ac}}{2a}$ ¼1vd½

$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4\times1\times(-6)}}{2\times1}$ ¼1vd½

$x = \frac{5 \pm \sqrt{25+24}}{2}$

$x = \frac{5 \pm \sqrt{49}}{2}$

$x = \frac{5 \pm 7}{2}$ ¼1vd½

(+) fpUg yu ij $x = \frac{5+7}{2}$ = x = 6

(-) fpUg yu ij $x = \frac{5-7}{2}$ = x = -1 ¼½ vd½

vr% vHkh"V ey (x) = 6, -1 gA ¼½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$½$½ **=** 5 vd ikIr gkxA

ç'u Ø-11 vFkok

gy %

ekuk l[;k x g rc mldk 0;RØe $\frac{1}{x}$ gkxkA ¼1vd½

ç'ukulkj l[;k vkj mldk 0;RØe dk ;kx $\frac{50}{7}$ gA

$x + \frac{1}{x} = \frac{50}{7}$ ¼1vd½

$\frac{x^2 + 1}{x} = \frac{50}{7}$

$7x^2+7 = 50x$

$7x^2-50x+7 = 0$ ¼1vd½

$7x^2-x-49x+7 = 0$

$x(7x-1)-7(7x-1) = 0$

$(7x-1)-(x-7) = 0$ ¼1vd½

;fn 7x-1 = 0 ;k x-7 = 0

$x = \frac{1}{7}$;k x = 7 ¼½ vd½

vr% vHkh"V l[;k 7 ;k $\frac{1}{7}$ gA ¼½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$½$½ = 5 vd ikIr gkxA

ç'u Ø-12 dy 5vd

fn;k g &

ey/ku (P) = 2000 #-] nj (r) = 4% , le; (n) = 3 o"k ¼1vd½

Kkr djuk g & pØof) C;kt CI

gy %

l=& feJ/ku $A = P\left(1 + \frac{r}{100}\right)^n$ ¼1vd½

$A = 2000\left(1 + \frac{4}{100}\right)^3$ ¼1vd½

$A = 2000 \times \frac{26}{25} \times \frac{26}{25} \times \frac{26}{25}$

A = 2249.73 ¼1vd½

l=& pØof) 0;kt ¾ feJ/ku & ey/ku

= 2249.73 – 2000

= 249.73 ¼½ vd½

vHkh"V pØof) 0;kt 249.73#i;s gkxk ¼½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$½$½ = 5 vd ikIr gkxA

ç'u Ø-12 vFkok **dy 5vd**

fn;k g &

flykb e'khu dk uxn eY; = 1600 #i;

N% ekg ckn n; fdLr dh jkf'k = 460 #i; ¼1vd½

Kkr djuk g &

fd'r d vk/kkj ij C;kt dh nj

gy &

vkf'kd Hkxrku d ckn 'k"k jkf'k = 1600-1200 = 400 #i; ¼1vd½

ç'ukulkj & 400#i; dk N% ekg dk C;kt 60 #i; gA ¼1vd½

400#i; dk ,d o"k dk C;kt ¾ 60×2

¾ 120 #i; ¼1½ vd½

1#i; dk ,d o"k dk C;kt ¾ $\frac{120}{400}$ #i;

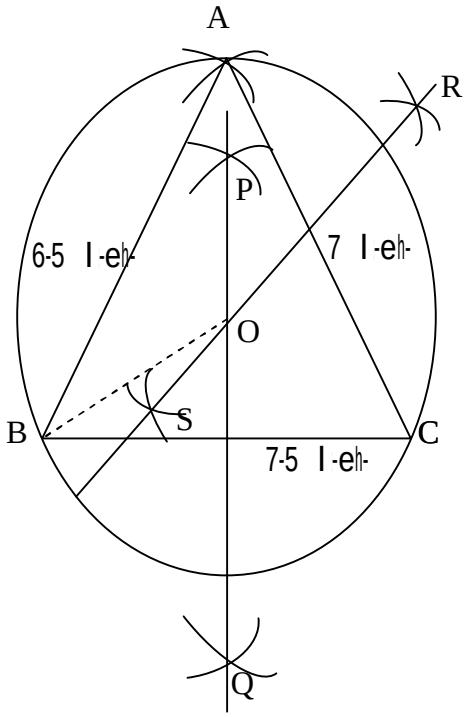
100#- dk ,d o"k dk C;kt ¾ $100 \times \frac{120}{400}$

¾ 30% ¼1vd½

vr% fd'r d vk/kkj ij C;kt dh nj 30% gA ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$½$1$½ = 5 vd ikIr gkxA

ç'u Ø-13 **dy 5 vd**



jpuk d in%&

¼1½ f=Hkt ABC dh jpuk dh ft le AB=6.5, BC=7.5 rFkk AC = 7 leh- gA

¼2½ Hkt k BC rFkk AC dk yEc lef}Hkk t d Øe'k PQ o RS [khpkA

¼3½ ;g yEc lef}Hkk t d O fcn ij ifPNn djr gA

¼4½ OB feykdj O dk dUn ekudj rFkk OB f=T;k ydj vHkh"V ifjoÙk cuk;kA

ukV & ¼1½ lgh Δ cuku ij 1 vd ¼2½ lgh yEc lef}Hkk t d [khpu ij 1 vd

¼3½ lgh ifjoÙk cuku ij 1 vd ¼4½ lgh ukekdu dju ij 1 vd

¼5½ jpuk d in fy[ku ij 1 vd ikIr gkxkA

ç'u Ø-13 vFkok **dy 5 vd**

gy %

f=Hkt ABC dh jpuk djuk

BC = 6.5 l-eh-

∠A = 45º

AC = 5.5 l-eh-

jpuk d pj.k &

¼1½ ,d j[kk[k.M BC = 6.5 l-eh- [khpkA

¼2½ BC d uhp B fcUn ij ∠CBE = 45º cuk;kA

¼3½ BC dk yEc lef}Hkkt d PQ çkIr fd;k] vr% D e/;fcUn BC dk çkIr gvkA

¼4½ BE d fcUn B ij yc [khpk tk PQ dk "O" ij dkVrk gA

¼5½ O dk dUæ ekudj vkj OB dk f=T;k ydj ,d oÙk [khpkA

¼6½ BC d e/;fcUn "D" l [AD ,o AD] 5-5 l-eh- dk pki oÙk ij [khpk ftl A ,o A' çkIr gvkA

¼7½ bl çdkj ABC ,o A'BC dk feyk;k tk fd vHkh"V f=Hkt dh jpuk gbA

ukV & fuEufyf[kr fooj.k d vulkj vd ikIRk gkx &

¼1½ lgh f=Hkt cuku ij 1 vd ¼2½ lgh yEck)d [khpu ij 1 vd

¼3½ lgh ifjoÙk cuku ij 1 vd ¼4½ lgh ukekdu dju ij 1 vd

¼5½ jpuk d in fy[ku ij 1 vd

ç'u Ø·14 **dy 5vd**

fl) djuk g $\sqrt{\frac{1-\sin\theta}{1+\sin\theta}} = Sec\theta - \tan\theta$

LHS $= \sqrt{\frac{1-\sin\theta}{1+\sin\theta}}$ ¼1vd½

v'k ,o gj e 1- sinθ dk x.kk fd;k rc

$= \sqrt{\frac{1-\sin\theta}{1+\sin\theta}\times\frac{1-\sin\theta}{1-\sin\theta}}$ ¼1vd½

$= \sqrt{\frac{(1-\sin\theta)^2}{(1-\sin^2\theta)}}$

$= \sqrt{\left(\frac{1-\sin\theta}{\cos}\right)^2}$ ¼1vd½

$= \frac{1-\sin\theta}{\cos\theta}$

$= \frac{1}{\cos\theta} - \frac{\sin\theta}{\cos\theta}$ ¼1vd½

= secθ-tanθ ¼1½ vd½

= RHS ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$½$½ **=** 5 vd ikIr gkxA

ç'u Ø·14 vFkok

fl) djuk g $\frac{\sin(90^o-A)\cos(90^o-A)}{\tan A}$ = 1-sin²A

L.H.S $= \frac{\sin(90^o-A)\cos(90^o-A)}{\tan A}$ ¼1vd½

fdUr sin (90-A) = cos A 0

cos (90-A) =sin A

$= \frac{\cos A\times\sin A}{\tan A}$ ¼1vd½

$$= \frac{\sin A \times \cos A}{\frac{\sin A}{\cos A}}$$ ¼1vd½

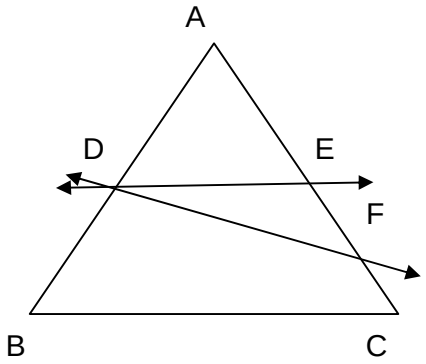
$= \cos^2 A$ ¼1vd½

$= 1-\sin^2 A$ ¼1½ vd½

= RHS ¼1½ vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$½$½ **=** 5 vd ikIr gkxA

ç'u Ø-15 **dy 6 vd**



fn;k g&

f=Hkt ABC e j[kk DE

Hktk AB dk D ij rFkk

Hktk AC dk E ij bl çdkj

çfrPNn djrh g fd $\frac{AD}{DB} = \frac{AE}{EC}$ ¼fp= 1vd½

fl) djuk g& DE II BC ¼1vd½

miifÙk & ekuk fd DE, BC d lekukUrj ugh g] rk D l ,d vU; j[kk [khph tk ldrh g tk AC dk F ij çfrPNn djrh gA

$\frac{AD}{DB} = \frac{AF}{FC}$ ..... (i) ¼1vd½

yfdu $\frac{AD}{DB} = \frac{AE}{EC}$ ..... (ii) fn;k g

$\frac{AF}{FC} = \frac{AE}{EC}$ [(i) vkj (ii) l] ¼1vd½

$\frac{AF}{FC} + 1 = \frac{AE}{EC} + 1$ ¼nkuk i{kk e 1 tkMu ij½

$$\frac{AF+FC}{FC}=\frac{AE+EC}{EC}$$

$$\frac{AC}{FC}=\frac{AC}{EC}$$ ¼1vd½

yfdu FC=EC rHkh lHko g tc fcUn E vkj F lkrh gkA

vr% DF vkj DE lkrh j[kk, gA

vr% DE || BC ¼1vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$1$1 = 6 vd ikIr gkxA

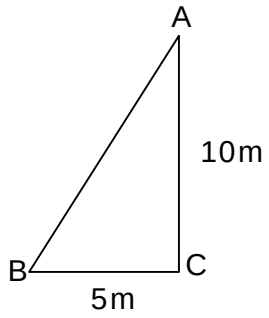
ç'u Ø-15 vFkok

fn;k g &

fp= e lh<h AB gA

nhokj l lh<h dk fupyk fljk BC = 5 ehVj]

f[kMdh dh Åpkbl AC = 10 ehVj gA ¼fp= 1vd½



∠C=90º = ∠ACB ¼1vd½

gy %& vr% ikbFkkxkjl çe; l

$AB^2 = AC^2 + BC^2$ ¼1vd½

$AB^2 = (10)^2 + (5)^2$

$= 100+25$

$= 125$ ¼1vd½

$AB = \sqrt{125}$

$AB = 5\sqrt{5}$ ehVj ¼1vd½

$AB = 5 \times 2.237$ ehVj ¼1½ vd½

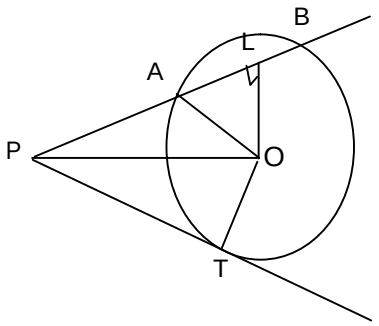
vr% lh<h dh yEckbZ $AB = 5\sqrt{5}$ ehVj gkxhA ¼1½ vd½

;k lh<h dh yEckbZ AB = 11.19 ehVj gkxhA

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$1$½$½ = 6 vd ikIr gkxA

ç'u Ø-16 **dy vd 6**

gy %



¼1 vd½

fn;k g & PAB oÙk dh Nnd j[kk g tk oÙk dk A vkj B ij
çfrPNn djrh g vkj PT Li'k j[kk gA ¼1 vd½

fl) djuk g & PA. PB = PT^2 ¼½ vd½

jpuk & OA, OP, OT dk feyk;kA ¼½ vd½

miifÙk &

PA. PB = (PL - AL) (PL+ LB)

;gk LB = AL D;kfd fcUn L, AB dk e/;fcUn gA

= (PL - AL) (PL+ AL) ¼1 vd½

PA.PB = $PL^2 - AL^2$

= $OP^2 - OL^2 - AL^2$ ¼ D;kfd $\angle PLO = 90^o$½

= $OP^2 - (OL^2 + AL^2)$ ¼1 vd½

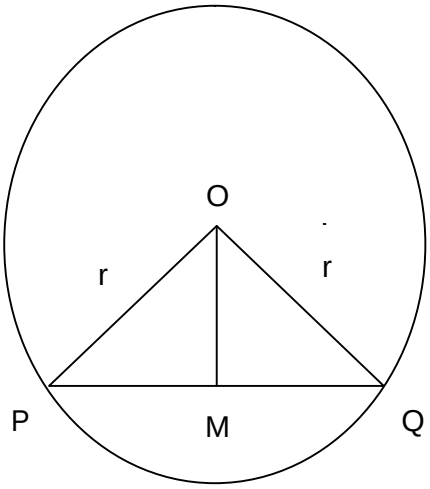
= $OP^2 - OA^2$

= $OP^2 - OT^2$ ¼D;kfd OA=OT= r½

= PT^2 **bfr fl)e** ¼1 vd½

ukV & mijkäkuqlkj fy[k tku ij 1$1$½$½$1$1$1 = 6 vd ikIr gkxA

ç'u Ø·16 vFkok **dy 6 vd**



fn;k g & PQ oÙk C(o, r) dh thok g] ¼fp= 1vd½

M thok dk e/; fcUn gA ¼1vd½

fl) djuk g& OM ⊥ PQ

jpuk & OP ,o OQ dk feyk;k ¼1vd½

miifÙk & ledk.k ΔOPM ,o ΔOQM e

OP = OQ ¼oÙk dh f=T;k, g½

PM = QM

OM = OM

∴ΔOPM ≅ ΔOQM ¼1vd½

∴∠OMP ≅ ∠OMQ

∠OMP +∠OMQ = 180º

∠OMP +∠OMP = 180º ¼1vd½

2∠OMP = 180º

∠OMP = 90º vr% OM ⊥ PQ ¼1vd½

;gh fl) djuk Fkk

ukV & mijkDrkulkj fy[k tkus ij 1$1$1$1$1$1 **=** 6 vd ikIr gkxA

ç'u Ø-17 **dy 6 vd**

gy %

vd	Nk= l[;k *f*	e/;eku *x*	$u = \frac{X - A}{i}$	$f \times u$
10-20	6	15	-3	-18
20-30	8	25	-2	-16
30-40	13	35	-1	-13
40-50	7	**45**	0	0
50-60	3	55	1	3
60-70	2	65	2	4
70-80	1	75	2	3
;kx	$\sum f = 40$			$\sum fu = -37$

¼3vd½

ekuk dfYir ek/; A = 45 rFkk ox vrjky i = 10

ek/; $= A + \frac{\sum f \times u}{\sum f} \times i$ ¼1vd½

$= 45 + \frac{-37}{40} \times 10$ ¼1vd½

= 45-9.25

= 35.75

mÙkj % ek/; ¾ 35-75 ¼1vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$1$1 **=** 6 vd ikIr gkxA

ç'u Ø-17 vFkok dy 6 vd

gy %

ox vUrjky	ckjckjrk f	lp;h vkofÙk cf
0-20	10	10
20-40	17	27
40-60	26	53
60-80	22	75
80-100	15	90
;kx	*N*= 90	

¼3vd½

i{k.kk dh l[;k *N* = 90

ekf/;dk l[;k $\frac{N}{2}$ = 45 vr% ekf/;dk ox 40-60 gkxk

ekf/;dk ox dh fuEu lhek *l* = 40

ekf/;dk ox d igy d ox dh vkofRr F = 27

ekf/;dk ox dh vkofRr f = 26

ekf/;dk ox dk vrjky h = 10 ¼1vd½

ekf/;dk M ¾ $l + [\frac{\frac{N}{2} - F}{f}] \times h$ ¼1vd½

$= 40 + \frac{45-27}{26} \times 20$

$= 40 + \frac{18}{26} \times 20$

= 40+13.84

= 53.84

mÙkj & ekf/;dk ¾ 53-84 ¼1vd½

ukV & mijkDrkulkj fy[k tku ij 1$1$1$1$1$1 **=** 6 vd ikIr gkxA