MATHEMATICS QUIZ

Dr T.Rajaretnam

St.Joseph's College(Autonomous)

December 17, 2010

1 Round 3

- Questions

Choose the Correct Answer

If If $(\sin\theta + cosec\,\theta) = 2$ then $\sin^2\theta + cosec^2\theta$ is equal to

(a) 1

(b) 4

(c) 2

(d) 0

Choose the Correct Answer

If If $(\sin\theta + cosec\,\theta) = 2$ then $\sin^2\theta + cosec^2\theta$ is equal to

(a) 1

(b) 4

(c) 2

(d) 0

Choose the Correct Answer

If If $(\sin\theta + cosec\,\theta) = 2$ then $\sin^2\theta + cosec^2\theta$ is equal to

(a) 1

(b) 4

(c) 2

(d) 0

goto exp

Choose the Correct Answer

$\sqrt{2+\sqrt{2+2\cos 4\theta}}$ is equal to

(a) $\cos\theta$

(b) $\cos 2\theta$

(c) $2\cos\theta$

(d) $2\cos 2\theta$

Choose the Correct Answer

$\sqrt{2+\sqrt{2+2\cos 4\theta}}$ is equal to

(a) $\cos\theta$

(b) $\cos 2\theta$

(c) $2\cos\theta$

(d) $2\cos 2\theta$

Choose the Correct Answer

$\sqrt{2+\sqrt{2+2\cos 4\theta}}$ is equal to

(a) $\cos\theta$

(b) $\cos 2\theta$

(c) $2\cos\theta$

(d) $2\cos 2\theta$

goto exp

Choose the Correct Answer

If a triangle ABC , right angled at C ,then

$\tan A + \tan B$ is equal to

(a) $a + b$

(b) $\left(\frac{c^2}{ab}\right)$

(c) $\left(\frac{a^2}{bc}\right)$

(d) $\left(\frac{b^2}{ac}\right)$

goto exp

Choose the Correct Answer

If a triangle ABC , right angled at C ,then

$\tan A + \tan B$ is equal to

(a) $a + b$

(b) $\left(\dfrac{c^2}{ab}\right)$

(c) $\left(\dfrac{a^2}{bc}\right)$

(d) $\left(\dfrac{b^2}{ac}\right)$

goto exp

Choose the Correct Answer

If a triangle ABC , right angled at C ,then

$\tan A + \tan B$ is equal to

(a) $a + b$
(b) $\left(\frac{c^2}{ab}\right)$
(c) $\left(\frac{a^2}{bc}\right)$
(d) $\left(\frac{b^2}{ac}\right)$

goto exp

Choose the Correct Answer

The area between the curves $y^2 = x$, $x^2 = y$ is equal to

(a) $\frac{16}{3}$

(b) 1

(c) $\frac{1}{4}$

(d) $\frac{1}{3}$

Choose the Correct Answer

The area between the curves $y^2 = x$, $x^2 = y$ is equal to

(a) $\frac{16}{3}$

(b) 1

(c) $\frac{1}{4}$

(d) $\frac{1}{3}$

Choose the Correct Answer

The area between the curves $y^2 = x$, $x^2 = y$ is equal to

(a) $\frac{16}{3}$

(b) 1

(c) $\frac{1}{4}$

(d) $\frac{1}{3}$

goto exp

Choose the Correct Answer

The angle between the pair of straight linesy$y^2 \sin^2\theta - xy\sin^2\theta + x^2(\cos^2\theta - 1) = 0$ is

(a) $\frac{\pi}{3}$

(b) $\frac{\pi}{4}$

(c) $\frac{2\pi}{3}$

(d) $\frac{\pi}{2}$

Choose the Correct Answer

The angle between the pair of straight lines$y^2\sin^2\theta - xy\sin^2\theta + x^2(\cos^2\theta - 1) = 0$ is

(a) $\frac{\pi}{3}$

(b) $\frac{\pi}{4}$

(c) $\frac{2\pi}{3}$

(d) $\frac{\pi}{2}$

Choose the Correct Answer

The angle between the pair of straight linesy$y^2 \sin^2\theta - xy\sin^2\theta + x^2(\cos^2\theta - 1) = 0$ is

(a) $\frac{\pi}{3}$

(b) $\frac{\pi}{4}$

(c) $\frac{2\pi}{3}$

(d) $\frac{\pi}{2}$

goto exp

Choose the Correct Answer

The eccentricity of the conic represented by

$x^2 - y^2 - 4x + 4y + 16 = 0$ is

(a) $\sqrt{2}$

(b) 1

(c) 2

(d) $\frac{1}{2}$

Choose the Correct Answer

The eccentricity of the conic represented by

$x^2 - y^2 - 4x + 4y + 16 = 0$ is

(a) $\sqrt{2}$

(b) 1

(c) 2

(d) $\frac{1}{2}$

Choose the Correct Answer

The eccentricity of the conic represented by

$x^2 - y^2 - 4x + 4y + 16 = 0$ is

(a) $\sqrt{2}$

(b) 1

(c) 2

(d) $\frac{1}{2}$

goto exp

Answer

Answer

$$(\sin\theta + cosec\theta) = 2$$

Answer

$$(\sin\theta + cosec\theta) = 2$$

$$(\sin\theta + cosec\theta)^2 = 4$$

Answer

$$(\sin\theta + cosec\theta) = 2$$

$$(\sin\theta + cosec\theta)^2 = 4$$

$$\left(\sin^2\theta + cosec^2\theta + 2\sin\theta cosec\theta\right) = 4$$

Answer

$$(\sin\theta + cosec\theta) = 2$$

$$(\sin\theta + cosec\theta)^2 = 4$$

$$\left(\sin^2\theta + cosec^2\theta + 2\sin\theta cosec\theta\right) = 4$$

$$\sin^2\theta + cosec^2\theta + 2 = 4$$

Return

Answer

$$(\sin\theta + cosec\theta) = 2$$

$$(\sin\theta + cosec\theta)^2 = 4$$

$$\left(\sin^2\theta + cosec^2\theta + 2\sin\theta cosec\theta\right) = 4$$

$$\sin^2\theta + cosec^2\theta + 2 = 4$$

$$\sin^2\theta + cosec^2\theta = 2$$

Return

Answer

Answer

$$2 + 2\cos 4\theta = 2(1 + \cos 4\theta)$$

Answer

$$2 + 2\cos 4\theta = 2(1 + \cos 4\theta)$$
$$= 2\, 2\cos^2 2\theta$$

Answer

$$2 + 2\cos 4\theta = 2(1 + \cos 4\theta)$$

$$= 2\,2\cos^2 2\theta$$

$$\therefore \sqrt{2 + \sqrt{2 + 2\cos 4\theta}} = \sqrt{2 + 2\cos 2\theta}$$

Answer

$$
\begin{aligned}
2 + 2\cos 4\theta &= 2(1 + \cos 4\theta) \\
&= 2\,2\cos^2 2\theta \\
\therefore \sqrt{2 + \sqrt{2 + 2\cos 4\theta}} &= \sqrt{2 + 2\cos 2\theta} \\
&= \sqrt{2\,2\cos^2\theta}
\end{aligned}
$$

Return

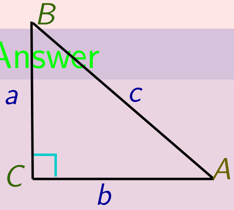
Answer

$$2 + 2\cos 4\theta = 2(1+\cos 4\theta)$$
$$= 2\,2\cos^2 2\theta$$
$$\therefore \sqrt{2+\sqrt{2+2\cos 4\theta}} = \sqrt{2+2\cos 2\theta}$$
$$= \sqrt{2\,2\cos^2\theta}$$
$$= 2\cos\theta$$

Return

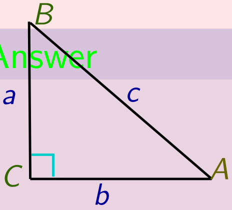
Answer

Answer



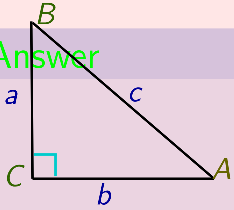
$$\tan A = \frac{a}{b} \;, \tan B = \frac{b}{a}$$

Answer



$$\tan A = \frac{a}{b}\ , \tan B = \frac{b}{a}$$

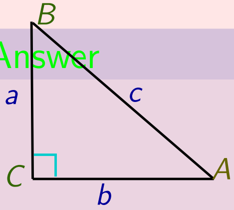
Answer



$\tan A = \frac{a}{b}$, $\tan B = \frac{b}{a}$

$$\tan A + \tan B = \frac{a}{b} + \frac{b}{a}$$

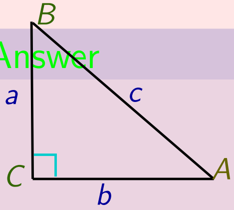
Answer



$\tan A = \frac{a}{b}$, $\tan B = \frac{b}{a}$

$$\tan A + \tan B = \frac{a}{b} + \frac{b}{a} = \frac{a^2 + b^2}{ab}$$

Answer



$\tan A = \frac{a}{b}$, $\tan B = \frac{b}{a}$

$$\tan A + \tan B = \frac{a}{b} + \frac{b}{a}$$
$$= \frac{a^2 + b^2}{ab}$$
$$= \frac{c^2}{ab}$$

Return

Answer

Answer

If $y^2 = 4ax$ and $x^2 = 4by$ then

Answer

If $y^2 = 4ax$ and $x^2 = 4by$ then

area $= \frac{4a \times 4b}{3}$

Answer

If $y^2 = 4ax$ and $x^2 = 4by$ then

area $= \frac{4a \times 4b}{3}$

$\therefore$ here area $= \frac{1 \times 1}{3}$

Return

Answer

Answer

$$ax^2 + 2hxy + by^2 = 0$$

Answer

$$ax^2 + 2hxy + by^2 = 0$$

– a pair of st.lines through orgin .

Answer

$$ax^2 + 2hxy + by^2 = 0$$

– a pair of st.lines through orgin .

If $a + b = 0$ then the two lines are perpendicular

Answer

$$ax^2 + 2hxy + by^2 = 0$$

– a pair of st.lines through orgin .

If $a + b = 0$ then the two lines are perpendicular

here $\boxed{y^2 \sin^2\theta - xy\sin^2\theta + x^2(\cos^2\theta - 1) = 0}$

Answer

$$ax^2 + 2hxy + by^2 = 0$$

– a pair of st.lines through orgin .

If $a + b = 0$ then the two lines are perpendicular

here $\boxed{y^2 \sin^2\theta - xy \sin^2\theta + x^2(\cos^2\theta - 1) = 0}$

$$a + b = \sin^2\theta + (\cos^2\theta - 1) = 1 - 1 = 0$$

Answer

$$ax^2 + 2hxy + by^2 = 0$$

– a pair of st.lines through orgin .

If $a + b = 0$ then the two lines are perpendicular

here $\boxed{y^2 \sin^2\theta - xy\sin^2\theta + x^2(\cos^2\theta - 1) = 0}$

$$a + b = \sin^2\theta + (\cos^2\theta - 1) = 1 - 1 = 0$$

$$\therefore \theta = \frac{\pi}{2}$$

Return

Answer

Answer

$$x^2 - y^2 - 4x + 4y + 16 = 0$$

Answer

$$x^2 - y^2 - 4x + 4y + 16 = 0$$

$$\implies (x-2)^2 - (y-2)^2 + 16 = 0$$

Answer

$$x^2 - y^2 - 4x + 4y + 16 = 0$$

$$\implies (x-2)^2 - (y-2)^2 + 16 = 0$$

$$\implies (y-2)^2 - (x-2)^2 = 16$$

Answer

$$x^2 - y^2 - 4x + 4y + 16 = 0$$

$$\implies (x-2)^2 - (y-2)^2 + 16 = 0$$

$$\implies (y-2)^2 - (x-2)^2 = 16$$

It is a rectangular hyperbola

Return

Answer

$$x^2 - y^2 - 4x + 4y + 16 = 0$$

$$\implies (x-2)^2 - (y-2)^2 + 16 = 0$$

$$\implies (y-2)^2 - (x-2)^2 = 16$$

It is a rectangular hyperbola

$$\therefore e = \sqrt{2}$$

Return