RAVI MATHS TUITION CENTER, PH - 8056206308

Trigonometry 1 mark

Date : 09-Aug-19

10th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 00:15:00 Hrs

Total Marks : 15

15 x 1 = 15

1) The value of is $sin^2\theta + \frac{1}{1+tan^2\theta}$ equal to

(a) $tan^2\theta$ (b) 1 (c) $cot^2\theta$ (d) 0

2) $\tan\theta \operatorname{cosec}^2\theta - \tan\theta$ is equal to

(a) $\sec\theta$ (b) $cot^2\theta$ (c) $\sin\theta$ (d) $cot\theta$

3) if $\sin\theta = \cos\theta = a$ and $\sec\theta + \operatorname{cosec}\theta = b$, then the value of b (a^2-1) is equal to

(a) 2a (b) 3a (c) 0 (d) 2ab

4) if $5x = \sec\theta$ and $\frac{5}{x} = \tan\theta$, then $x^2 - \frac{1}{x^2}$ is equal to

(a) 25 (b) $\frac{1}{25}$ (c) 5 (d) 1

5) if $\sin\theta = \cos\theta$, then $2\tan^2\theta + \sin^2\theta - 1$ is equal to

(a) $\frac{-3}{2}$ (b) $\frac{3}{2}$ (c) $\frac{2}{3}$ (d) $\frac{-2}{3}$

6) if $x = a\tan\theta$ and $y = a\sec\theta$ then

(a) $\frac{y^2}{b^2} - \frac{x^2}{a^2} = 1$ (b) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ (c) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ (d) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 0$

7) $(1+\tan\theta+\sec\theta)(1+\cot\theta-\operatorname{cosec}\theta)$ is equal to

(a) 0 (b) 1 (c) 2 (d) -1

8) $a\cot\theta + b\operatorname{cosec}\theta = p$ and $b\cot\theta + a\operatorname{cosec}\theta = q$ then p^2-q^2 is equal to

(a) a^2-b^2 (b) b^2-a^2 (c) $a^{2+}b^2$ (d) b-a

9) If the ratio of the height of a tower and the length of its shadow is $\sqrt{3}$:1 then the angle of elevation of the sun has measure

(a) 45° (b) 30° (c) 90° (d) 60°

10) The electric pole subtends an angle of 30° at a point on the same level as its foot. At a second point 'b' metres above the first, the depression of the foot of the tower is 60°. The height of the tower (in metres) is equal to

(a) $\sqrt{3}$ b (b) $\frac{b}{3}$ (c) $\frac{b}{2}$ (d) $\frac{b}{\sqrt{3}}$

11) A tower is 60 m height. Its shadow is x metres shorter when the sun's altitude is 45° than when it has been 30°, then x is equal to

(a) 41.92 m (b) 43.92 m (c) 43 m (d) 45.6 m

12) The angle of depression of the top and bottom of 20 m tall building from the top of a multistoried building are 30° and 60° respectively. The height of the multistoried building and the distance between two buildings (in metres) is

(a) $20,10\sqrt{3}$ (b) $30,5\sqrt{3}$ (c) 20,10 (d) $30,10\sqrt{3}$

13) Two persons are standing 'x' metres apart from each other and the height of the first person is double that of the other. If from the middle point of the line joining their feet an observer finds the angular elevations of their tops to be complementary, then the height of the shorter person (in metres) is

(a) $\sqrt{2}$ x (b) $\frac{x}{2\sqrt{2}}$ (c) $\frac{x}{\sqrt{2}}$ (d) 2x

14) The angle of elevation of a cloud from a point h metres above a lake is β. The angle of depression of its reflection in the lake is 45°. The height of location of the cloud from the lake is

(a) $\frac{h(1+tan\beta)}{1-tan\beta}$ (b) $\frac{h(1-tan\beta)}{1+tan\beta}$ (c) $h\tan(45°-\beta)$ (d) none of these

15) If $(\sin\alpha + \operatorname{cosec}\alpha)^2 + (\cos\alpha + \sec\alpha)^2 = k + \tan^2\alpha + \cot^2\alpha$, then the value of k is equal to

(a) 9 (b) 7 (c) 5 (d) 3

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Trigonometry 2 marks

Date : 09-Aug-19

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Maths

Reg.No. : | | | | | | |

Time : 00:30:00 Hrs

Total Marks : 30

13 x 2 = 26

1) Prove that $\tan^{2\theta}$-$\sin^{2\theta}$ = $\tan^{2\theta}$ $\sin^{2\theta}$

2) prove that $\frac{sinA}{1+cosA} = \frac{1-cosA}{sinA}$

3) prove that 1+$\frac{cot^2\theta}{1+cosec\theta+1}$ =cosecθ

4) prove that secθ -cosθ =tanθ sinθ

5) prove that $\sqrt{\frac{1+cos\theta}{1-cos\theta}}$ =cosec θ +cotθ

6) prove that $\frac{sec\theta}{sin\theta} - \frac{sin\theta}{cos\theta} = cot\theta$

7) prove that $\sin^2$ A$\cos^2$ B+$\cos^2$ A$\sin^2$ B+$\cos^2$ A$\cos^2$ B+$\sin^2$ A$\sin^2$ B=1

8) if cosθ +sinθ =$\sqrt{2}$ cos θ , then prove that cosθ - sinθ =$\sqrt{2}$ sinθ

9) prove that (cosecθ -sinθ) (secθ -cosθ) (tanθ +cotθ)=1

10) if cosecθ +cotθ =p, then prove that cosθ = $\frac{p^2-1}{p^2+1}$

11) prove that $\tan^2$A-$\tan^2$B=$\frac{sin^2A-sin^2B}{cos^2Acos^2B}$

12) shoe that $\left(\frac{1+tan^2A}{1+cot^2A}\right) = \left(\frac{1-tanA}{1-cotA}\right)^2$

13) Prove that see A (1 - sin A) (see A + tan A) = 1.

2 x 2= 4

14) Evaluate $\frac{tan65^o}{tan25^o}$

15) If sin 3A = cos (A - 26°), where 3A is an acute angle, find the value at A.

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RAVI MATHS TUITION CENTER, PH - 8056206308

Trigonometry 5 msrks

Date : 09-Aug-19

10th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 01:30:00 Hrs

Total Marks : 75

15 x 5 = 75

1) prove the following identities.

$\sec^6\theta = \tan^6\theta + 3\tan^2\theta \sec^2\theta + 1$

2) prove the following identities.

$\sec^4\theta (1-\sin^4\theta) - 2\tan^2\theta = 1$

3) prove the following identities.

$\frac{sinA - sinB}{cosA + cosB} + \frac{cosA - cosB}{sinA + sinB} = 0$

4) if $\frac{cos\alpha}{cos\beta}$ =m and $\frac{cos\alpha}{sin\beta}$ =n, then prove that $(m^2+n^2)\cos^2$

5) if $\sin\theta + \cos\theta$ =p and $\sec\theta$ =p and $\sec\theta + \operatorname{cosec}\theta$ =q,then prove that $q(p^2-1)=2p$

6) if $\frac{cos\theta}{1+sin\theta} = \frac{1}{a}$,then prove that $\frac{a^2-1}{a^2+1} = \sin\theta$

7) Prove that

$\cot^2 A\left(\frac{secA-1}{1+sinA}\right) \sec^2 A\left(\frac{sinA-1}{1+secA}\right) = 0$

8) prove that $\left(\frac{1+sin\theta-cos\theta}{1+sin\theta+cos\theta}\right)^2 = \frac{1-cos\theta}{1+cos\theta}$

9) prove the following identities.

$\tan^4\theta + \tan^2\theta = \sec^4\theta - \sec^2\theta$

10) prove the following identities

$\sqrt{\frac{1+sin\theta}{1-sin\theta}} + \sqrt{\frac{1+sin\theta}{1-sin\theta}} = 2sec\theta$

11) prove the following identities.

$(\sin\theta \sec)^2 + (\cos\theta + \operatorname{cosec}\theta)^2 = 1 + (\sec\theta + \operatorname{cosec}\theta)^2$

12) prove the following identities.

$\frac{sin^3A + cos^3A}{sinA + cosA} + \frac{sin^3A - cos^3A}{sinA - cosA} = 2$

13) if $\sqrt{3}\ \sin\theta - \cos\theta = 0$,then slow that $\tan 3\theta = \frac{3tan\theta - tan^3\theta}{1-3tan^2\theta}$

14) if $\cot\theta + \tan\theta$ =x and $\sec\theta - \cos\theta$ =q, then prove that $q(p^2-1)=2p$

15) if $\sin\theta (1+\sin^2\theta) = \cos^2\theta$,then prove that $\cos^6\theta - 4\cos^4\theta + 8\cos^2\theta = 4$

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