EduSahara™ Assignment

Name : Trigonometric Identities

Chapter : Trigonometrical Identities

Grade : ICSE Grade X

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1. Which of the following are true?

a) $\text{cosec}^2\theta - \cot^2\theta = 1, 0 \le \theta \le 90°$

b) $\sec^2\theta + \tan^2\theta = 1, 0 \le \theta \le 90°$

c) $\sin^2\theta + \cos^2\theta = 1, 0 \le \theta \le 90°$

d) $\text{cosec}^2\theta + \cot^2\theta = 1, 0 \le \theta \le 90°$

e) $\sec^2\theta - \tan^2\theta = 1, 0 \le \theta \le 90°$

f) $\sin^2\theta - \cos^2\theta = 1, 0 \le \theta \le 90°$

(i) {b,a} (ii) {a,c,e} (iii) {d,c} (iv) {d,a,c} (v) {f,b,e}

2. $\dfrac{1 + \tan^2\theta}{1 + \cot^2\theta} =$

(i) 1 (ii) $\sec^2\theta$ (iii) $\text{cosec}^2\theta$ (iv) $\tan^2\theta$ (v) $\cot^2\theta$

3. Which of the following are true?

a) $\dfrac{1 + \sin\theta}{\cos\theta} + \dfrac{\cos\theta}{1 + \sin\theta} = 2\sec\theta$

b) $\dfrac{\cos\theta}{\text{cosec}\,\theta + 1} + \dfrac{\cos\theta}{\text{cosec}\,\theta - 1} = 2\tan\theta$

c) $(\sec\theta - \tan\theta)^2 = \dfrac{1 + \sin\theta}{1 - \sin\theta}$

d) $(\sec\theta - \tan\theta)^2 = \dfrac{1 - \sin\theta}{1 + \sin\theta}$

e) $\dfrac{\cos\theta}{1 - \sin\theta} + \dfrac{\cos\theta}{1 + \sin\theta} = 2$

(i) {c,a} (ii) {e,b} (iii) {c,a,b} (iv) {a,b,d} (v) {c,e,d}

4. Which of the following are true?

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

b) $\cos^3\theta - \sin^3\theta = (\sin\theta + \cos\theta)(1 - \sin\theta\cos\theta)$

c) $\cos^3\theta + \sin^3\theta = (\sin\theta + \cos\theta)(1 - \sin\theta\cos\theta)$

d) $\dfrac{\cos\theta}{1 + \sin\theta} = \dfrac{1 - \sin\theta}{\cos\theta}$

e) $(\sin\theta - \cos\theta)^2 = 1 + \sin 2\theta$

f) $\dfrac{\sec\theta}{1 + \operatorname{cosec}\theta} = \dfrac{1 - \operatorname{cosec}\theta}{\sec\theta}$

g) $(\sin\theta + \cos\theta)^2 = 1 + \sin 2\theta$

(i) {b,a} (ii) {e,g,a} (iii) {e,c} (iv) {a,c,d,g} (v) {f,b,d}

5. If $q = \cos\theta + \sin\theta$, $r = \cos\theta\sin\theta$ then

(i) $(q^2 + r^2) = 1$ (ii) $(q^2 + r^2) = 0$ (iii) $(q^2 - r^2) = 1$ (iv) $q^2 = (2r+1)$ (v) $q^2 = (-2r+1)$

6. If $s = \cos\theta + \sin\theta$, $t = \cos\theta - \sin\theta$ then

(i) $(s^2 - t^2) = 1$ (ii) $(s^2 - t^2) = 2$ (iii) $(s^2 + t^2) = 2$ (iv) $(s^2 + t^2) = 0$ (v) $(s^2 + t^2) = 1$

7.

a) $(u+v)^2 = c^2$

b) $(u^2 - v^2) = c^2$

c) $(u^2 + v^2) = c^2$

d) $\dfrac{u^2}{v^2} = \tan^2\theta$

e) $2uv = c^2 \sin 2\theta$

(i) {a,c,d} (ii) {a,b,e} (iii) {b,d} (iv) {c,d,e} (v) {a,c}

8. If $c = s\cos\theta + t\sin\theta$ and $d = s\sin\theta - t\cos\theta$, then

(i) $cd = st$ (ii) $(c^2 + d^2) = (s^2 + t^2)$ (iii) $(s^2 + c^2) = (t^2 + d^2)$ (iv) $(c^2 - d^2) = (s^2 - t^2)$

Assignment Key

1) (ii)	2) (iv)	3) (iv)	4) (iv)	5) (iv)	6) (iii)
7) (iv)	8) (ii)				

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