EduSahara™ Assignment

Name : Trigonometric Identities

Chapter : Trigonometrical Identities

Grade : ICSE Grade X

1. Which of the following are true?

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

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

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

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

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

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

3. Which of the following are true?

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

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

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

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

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

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

4. Which of the following are true?

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

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

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

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

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

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

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

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

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

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

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

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

7.

a) $2wx = d^2 \sin 2\theta$

b) $(w^2 - x^2) = d^2$

c) $(w + x)^2 = d^2$

d) $\dfrac{w^2}{x^2} = \tan^2\theta$

e) $(w^2 + x^2) = d^2$

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

8. If $b = x\cos\theta + y\sin\theta$ and $c = x\sin\theta - y\cos\theta$, then

(i) $(b^2 - c^2) = (x^2 - y^2)$ (ii) $(x^2 + b^2) = (y^2 + c^2)$ (iii) $(b^2 + c^2) = (x^2 + y^2)$ (iv) $bc = xy$

Assignment Key

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