EduSahara™ Assignment

Name : Trigonometric Identities

Chapter : Introduction to Trigonometry

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

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

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

2. $\dfrac{\sin^2 80° + \sin^2 10°}{\cos^2 35° + \cos^2 55°} =$

   (i) 0 (ii) 2 (iii) 1 (iv) -1 (v) undefined

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

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

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

4. Which of the following are true?

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

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

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

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

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

5. If $u = \cos\theta + \sin\theta$, $v = \cos\theta\sin\theta$ then

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

6. If $y = \cos\theta + \sin\theta$, $z = \cos\theta - \sin\theta$ then

(i) $(y^2 + z^2) = 2$ (ii) $(y^2 + z^2) = 0$ (iii) $(y^2 - z^2) = 1$ (iv) $(y^2 - z^2) = 2$ (v) $(y^2 + z^2) = 1$

7.

a) $(p+q)^2 = a^2$

b) $(p^2 - q^2) = a^2$

c) $2pq = a^2 \sin 2\theta$

d) $(p^2 + q^2) = a^2$

e) $\dfrac{p^2}{q^2} = \tan^2\theta$

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

8. If $d = p\cos\theta + q\sin\theta$ and $e = p\sin\theta - q\cos\theta$, then

(i) $de = pq$ (ii) $(p^2 + d^2) = (q^2 + e^2)$ (iii) $(d^2 - e^2) = (p^2 - q^2)$ (iv) $(d^2 + e^2) = (p^2 + q^2)$

Assignment Key

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