EduSahara™ Assignment

Name : Trigonometric Identities

Chapter : Introduction to Trigonometry

Grade : CBSE Grade X

1. Which of the following are true?

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

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

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

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

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

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

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

2. $\dfrac{\sin^2 20° + \sin^2 70°}{\cos^2 15° + \cos^2 75°} =$

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

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

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

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

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

4. Which of the following are true?

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

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

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

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

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

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

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

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

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

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

6. If $v = \cos\theta + \sin\theta$, $w = \cos\theta - \sin\theta$ then

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

7.

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

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

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

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

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

(i) {b,c,e} (ii) {a,d,e} (iii) {b,a} (iv) {c,d} (v) {b,a,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) $(b^2 - c^2) = (x^2 - y^2)$ (iii) $bc = xy$ (iv) $(x^2 + b^2) = (y^2 + c^2)$

Assignment Key

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