



1. Which of the following are true?

a)  $\operatorname{cosec}^2 \theta - \cot^2 \theta = 1, 0 \leq \theta \leq 90^\circ$

b)  $\sec^2 \theta - \tan^2 \theta = 1, 0 \leq \theta \leq 90^\circ$

c)  $\sin^2 \theta - \cos^2 \theta = 1, 0 \leq \theta \leq 90^\circ$

d)  $\sin^2 \theta + \cos^2 \theta = 1, 0 \leq \theta \leq 90^\circ$

e)  $\operatorname{cosec}^2 \theta + \cot^2 \theta = 1, 0 \leq \theta \leq 90^\circ$

f)  $\sec^2 \theta + \tan^2 \theta = 1, 0 \leq \theta \leq 90^\circ$

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

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

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

3. Which of the following are true?

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

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

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

d)  $\frac{\cos \theta}{\operatorname{cosec} \theta + 1} + \frac{\cos \theta}{\operatorname{cosec} \theta - 1} = 2 \tan \theta$

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

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

4. Which of the following are true?

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

b) 
$$\frac{\sec\theta}{1 + \operatorname{cosec}\theta} = \frac{1 - \operatorname{cosec}\theta}{\sec\theta}$$

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

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

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

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

g) 
$$\frac{\cos\theta}{1 + \sin\theta} = \frac{1 - \sin\theta}{\cos\theta}$$

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

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

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

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

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

7.

a)  $(t^2 - u^2) = d^2$

b)  $2tu = d^2 \sin 2\theta$

c) 
$$\frac{t^2}{u^2} = \tan^2\theta$$

d)  $(t+u)^2 = d^2$

e)  $(t^2 + u^2) = d^2$

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

8. If  $a = q\cos\theta + r\sin\theta$  and  $b = q\sin\theta - r\cos\theta$ , then

(i)  $ab = qr$  (ii)  $(q^2 + a^2) = (r^2 + b^2)$  (iii)  $(a^2 - b^2) = (q^2 - r^2)$  (iv)  $(a^2 + b^2) = (q^2 + r^2)$

## Assignment Key

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1) (v)

2) (i)

3) (v)

4) (i)

5) (ii)

6) (iv)

7) (v)

8) (iv)