

EduSahara™ Learning Center Assignment**Grade : Class X, ICSE****Chapter : Trigonometrical Identities****Name : Trigonometry Miscellaneous**

1. Which of the following are true?

- a) The value of $\sin A$ is always less than 1
 - b) The value of $\cot A$ is always less than 1
 - c) If $\sin A = 0$, then $\cos A = 1$ or $\cos A = -1$
 - d) $\cos A$ is the abbreviation for $\operatorname{cosec} A$
 - e) The value of $\tan A$ is always less than 1
- (i) {b,a} (ii) {d,c,a} (iii) {d,c} (iv) {a,c} (v) {e,b,a}

2. For angle values from 0° to 90° , which of the following are true?

- a) The tangent value of the angle increases
 - b) The sine value of the angle increases
 - c) The sum of the squares of the sine and cosine values remains a constant
 - d) The cotangent value of the angle increases
 - e) The product of the sine and cosine values remains a constant
 - f) The cosine value of the angle increases
- (i) {d,a} (ii) {f,d,c} (iii) {e,b} (iv) {a,b,c} (v) {e,a,b}

3. Which of the following are true?

- a) $\tan B = \tan \times B$
 - b) The cosecant of an angle is the reciprocal of the secant of the angle
 - c) The cosine value of an angle is the reciprocal of the sine of the angle.
 - d) $\cos(B + C) = \cos B + \cos C$
 - e) The cotangent of an angle is the reciprocal of the tangent of the angle.
 - f) $\sin(B + C) = \sin B + \sin C$
- (i) {a,e} (ii) {e} (iii) {b,e} (iv) {f,e} (v) {c,d,e}

4. Which of the following are true?

- a) The value of $\sin \theta$ increases as θ increases from 0° to 90°
- b) $\sin(H + I) = \sin H + \sin I$
- c) $\tan \theta = \cot \theta$ for no value of θ
- d) $\cos(H + I) = \cos H + \cos I$
- e) $\sin \theta = \cos \theta$ for all θ
- f) $\tan(H + I) = \tan H + \tan I$

g) The value of $\cos \theta$ increases as θ increases from 0° to 90°

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

5. If $\sin 2A = 2 \sin A$, then $A =$

(i) 60° (ii) 0° (iii) 30° (iv) 90° (v) 45°

6. If $\sin(G + H) = \frac{1}{2} \sqrt{3}$ and $\sin(G - H) = \frac{1}{2}$, find G & H

(i) $G = 47^\circ, H = 17^\circ$

(ii) $G = 45^\circ, H = 15^\circ$

(iii) $G = 44^\circ, H = 14^\circ$

(iv) $G = 46^\circ, H = 16^\circ$

(v) $G = 43^\circ, H = 13^\circ$

7. If $\tan(H + I) = \sqrt{3}$ and $\tan(H - I) = \sqrt{\frac{1}{3}}$, find H & I

(i) $H = 45^\circ, I = 15^\circ$

(ii) $H = 44^\circ, I = 14^\circ$

(iii) $H = 43^\circ, I = 13^\circ$

(iv) $H = 47^\circ, I = 17^\circ$

(v) $H = 46^\circ, I = 16^\circ$

8. In $\triangle KLM$, right angled at L , if $\tan K = \frac{1}{2}$, find $\sin K \cos M + \cos K \sin M$

(i) $\frac{1}{2} \sqrt{5}$ (ii) $\frac{1}{5} \sqrt{5}$ (iii) $\frac{2}{5} \sqrt{5}$ (iv) $\sqrt{5}$ (v) 1

9. In $\triangle MNO$, right angled at N , if $\tan M = \frac{2}{7}$, find $\cos M \cos O - \sin M \sin O$

(i) $\frac{1}{2} \sqrt{53}$ (ii) 0 (iii) $\frac{7}{53} \sqrt{53}$ (iv) $\frac{1}{7} \sqrt{53}$ (v) $\frac{2}{53} \sqrt{53}$

10. If $\cot \theta = \frac{2}{3}$, find $\frac{(1 + \sin \theta)(1 - \sin \theta)}{(1 - \cos \theta)(1 + \cos \theta)}$

(i) $\frac{4}{7}$ (ii) $\frac{2}{3}$ (iii) $\frac{4}{11}$ (iv) $\frac{2}{9}$ (v) $\frac{4}{9}$

11. If $\tan \theta = \frac{1}{3}$, find $(1 + \cos \theta)(1 - \cos \theta)$

$$(1 + \sin \theta)(1 - \sin \theta)$$

(i) $\frac{1}{11}$ (ii) $\frac{1}{3}$ (iii) $\frac{1}{7}$ (iv) $\frac{1}{9}$ (v) $(-\frac{1}{9})$

12. Find the value of $\frac{(1 + \sin \theta)}{(\cos \theta)} + \frac{(\cos \theta)}{(1 + \sin \theta)}$

(i) $2 \sin \theta$ (ii) $2 \operatorname{cosec} \theta$ (iii) $2 \cos \theta$ (iv) $2 \sec \theta$

13. Find the value of $5 \sec^2 \theta - 5 \tan^2 \theta$

(i) 7 (ii) 5 (iii) 0 (iv) 3 (v) 1

14. If $\tan \theta + \cot \theta = 6$, find $\tan^2 \theta + \cot^2 \theta$

(i) 35 (ii) 33 (iii) 32 (iv) 34 (v) 37

15. If $\tan \theta - \cot \theta = 2$, find $\tan^2 \theta + \cot^2 \theta$

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

16. If $\sin 8x = \cos((x+27))$, then $x =$

(i) 7 (ii) 4 (iii) 6 (iv) 8 (v) 10

17. If $\cos 8x = \sin((x-18))$, then $x =$

(i) 12 (ii) 10 (iii) 11 (iv) 15 (v) 13

18. If $\tan 6x = \cot((x+41))$, then $x =$

(i) 8 (ii) 5 (iii) 6 (iv) 7 (v) 9

19. If $\cot 4x = \tan((x+40))$, then $x =$

(i) 11 (ii) 10 (iii) 8 (iv) 12 (v) 9

20. If $\sec 7x = \operatorname{cosec}((x+26))$, then $x =$

(i) 7 (ii) 6 (iii) 11 (iv) 8 (v) 9

21. If $\operatorname{cosec} 5x = \sec((x+18))$, then $x =$

(i) 12 (ii) 15 (iii) 13 (iv) 9 (v) 11

22. If Q, R and S are the interior angles of a triangle, then $\sin\left(\frac{Q+R}{2}\right) =$

(i) $\sin\left(\frac{Q}{2}\right)$ (ii) $\sin\left(\frac{S}{2}\right)$ (iii) $\cos\left(\frac{S}{2}\right)$ (iv) $\cos\left(\frac{Q}{2}\right)$ (v) $\sin S$

23. Which of the following are true?

- a) $\tan 44^\circ = \cot 46^\circ$
- b) $\sin 21^\circ = \cos 21^\circ$
- c) $\sin 48^\circ = \cos 42^\circ$
- d) $\sin 42^\circ = \cos 48^\circ$
- e) $\cos 46^\circ = \sin 46^\circ$
- f) $\sec 52^\circ = \operatorname{cosec} 38^\circ$
- g) $\sin 31^\circ = \cos 59^\circ$

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

24. Which of the following are true?

- a) $\operatorname{cosec} 90^\circ$ is not defined
- b) $\operatorname{cosec} 0^\circ$ is not defined
- c) $\cot 0^\circ$ is not defined
- d) $\sec 0^\circ$ is not defined
- e) $\tan 90^\circ$ is not defined
- f) $\sec 90^\circ$ is not defined
- g) $\cot 90^\circ$ is not defined
- h) $\tan 0^\circ$ is not defined

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

25. Which of the following are true?

a) $\cos \theta = \frac{1}{\operatorname{cosec} \theta}$

b) $\cot \theta = \frac{1}{\sec \theta}$

c) $\sec \theta = \frac{1}{\cos \theta}$

d) $\operatorname{cosec} \theta = 1$

$$\overline{\sin \theta}$$

$$e) \sec \theta = \frac{1}{\sin \theta}$$

$$f) \tan \theta = \frac{1}{\cot \theta}$$

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

26. Which of the following are true?

a) $\tan 90^\circ = 1$

b) $\cos 0^\circ = 1$

c) $\cos 90^\circ = 1$

d) $\sin 45^\circ = 1$

e) $\sin 0^\circ = 1$

f) $\cos 45^\circ = 1$

g) $\sin 90^\circ = 1$

h) $\tan 0^\circ = 1$

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

27. Which of the following are true?

a) $\tan 0^\circ = 0$

b) $\cos 0^\circ = 0$

c) $\sin 90^\circ = 0$

d) $\tan 90^\circ = 0$

e) $\cos 90^\circ = 0$

f) $\sin 0^\circ = 0$

g) $\cos 45^\circ = 0$

h) $\sin 45^\circ = 0$

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

28. Which of the following are true?

a) $\cot(90 + \theta) = -\cot \theta$

b) $\sec(90 + \theta) = -\operatorname{cosec} \theta$

c) $\operatorname{cosec}(90 + \theta) = -\operatorname{cosec} \theta$

d) $\operatorname{cosec}(90 + \theta) = \sec \theta$

$\sec(\quad) = \sec$

e) $90 + \theta = -\theta$

f) $\cot(90 + \theta) = -\tan \theta$

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

29. Which of the following are true?

a) $\tan(90 + \theta) = -\cot \theta$

b) $\sin(90 + \theta) = \cos \theta$

c) $\tan(90 + \theta) = -\tan \theta$

d) $\cos(90 + \theta) = -\sin \theta$

e) $\cos(90 + \theta) = -\cos \theta$

f) $\sin(90 + \theta) = -\sin \theta$

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

30. Which of the following are true?

a) $\tan(-\theta) = \tan \theta$

b) $\sin(-\theta) = \sin \theta$

c) $\sin(-\theta) = -\sin \theta$

d) $\cos(-\theta) = -\cos \theta$

e) $\cos(-\theta) = \cos \theta$

f) $\tan(-\theta) = -\tan \theta$

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

31. Which of the following are true?

a) $\cot(-\theta) = -\cot \theta$

b) $\operatorname{cosec}(-\theta) = \operatorname{cosec} \theta$

c) $\sec(-\theta) = \sec \theta$

d) $\sec(-\theta) = -\sec \theta$

e) $\cot(-\theta) = \cot \theta$

f) $\operatorname{cosec}(-\theta) = -\operatorname{cosec} \theta$

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

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

(i) $(r^2 + s^2) = 0$

(ii) $(r^2 - s^2) = 1$

(iii) $r^2 = (2s + 1)$

$$(iv) \ (r^2 + s^2) = 1$$

$$(v) \ r^2 = (-2s + 1)$$

33. If $p = \cos \theta + \sin \theta$, $q = \cos \theta - \sin \theta$ then

$$(i) \ (p^2 + q^2) = 2$$

$$(ii) \ (p^2 + q^2) = 1$$

$$(iii) \ (p^2 - q^2) = 1$$

$$(iv) \ (p^2 - q^2) = 2$$

$$(v) \ (p^2 + q^2) = 0$$

34. If $q = f \sin \theta$, $r = f \cos \theta$, then which of the following are true?

$$a) \ \frac{q^2}{r^2} = \tan^2 \theta$$

$$b) \ (q^2 - r^2) = f^2$$

$$c) \ 2qr = f^2 \sin 2\theta$$

$$d) \ (q^2 + r^2) = f^2$$

$$e) \ (q+r)^2 = f^2$$

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

35. If $c = w \cos \theta + x \sin \theta$ and $d = w \sin \theta - x \cos \theta$, then

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

$$(ii) \ (c^2 - d^2) = (w^2 - x^2)$$

$$(iii) \ cd = wx$$

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

Assignment Key

- 1) (iv)
- 2) (iv)
- 3) (ii)
- 4) (i)
- 5) (ii)
- 6) (ii)
- 7) (i)
- 8) (v)
- 9) (ii)
- 10) (v)
- 11) (iv)
- 12) (iv)
- 13) (ii)
- 14) (iv)
- 15) (ii)
- 16) (i)
- 17) (i)
- 18) (iv)
- 19) (ii)
- 20) (iv)
- 21) (i)
- 22) (iii)
- 23) (iii)
- 24) (iv)
- 25) (ii)
- 26) (iii)
- 27) (i)
- 28) (v)
- 29) (v)
- 30) (v)
- 31) (iv)
- 32) (iii)
- 33) (i)
- 34) (iv)
- 35) (iv)