EduSahara™ Assignment

Name : Trigonometry Miscellaneous

Chapter : Trigonometrical Identities

Grade : ICSE Grade X

1. Which of the following are true?

   a) If $\sin D = 0$, then $\cos D = 1$ or $\cos D = -1$
   b) The value of $\sin D$ is always less than 1
   c) $\cos D$ is the abbrieviation for $\operatorname{cosec} D$
   d) The value of $\tan D$ is always less than 1
   e) The value of $\cot D$ is always less than 1

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

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

   a) The cosine value of the angle increases
   b) The sum of the squares of the sine and cosine values remains a constant
   c) The sine value of the angle increases
   d) The tangent value of the angle increases
   e) The product of the sine and cosine values remains a constant
   f) The cotangent value of the angle increases

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

3. Which of the following are true?

   a) The cosine value of an angle is the reciprocal of the sine of the angle.
   b) $\tan H = \tan \times H$
   c) The cosecant of an angle is the reciprocal of the secant of the angle
   d) $\cos(H + I) = \cos H + \cos I$
   e) $\sin(H + I) = \sin H + \sin I$
   f) The cotangent of an angle is the reciprocal of the tangent of the angle.

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

4. Which of the following are true?

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

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

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

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

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

(i) G=43°,H=13° (ii) G=45°,H=15° (iii) G=44°,H=14° (iv) G=47°,H=17° (v) G=46°,H=16°

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

(i) A=44°,B=14° (ii) A=43°,B=13° (iii) A=46°,B=16° (iv) A=47°,B=17° (v) A=45°,B=15°

8. In $\triangle FGH$, right angled at G, if $\tan F=\frac{7}{9}$, find $\sin F\cos H+\cos F\sin H$

(i) $\frac{1}{7}\sqrt{130}$ (ii) 1 (iii) $\frac{1}{9}\sqrt{130}$ (iv) $\frac{7}{130}\sqrt{130}$ (v) $\frac{9}{130}\sqrt{130}$

9. In $\triangle ABC$, right angled at B, if $\tan A=\frac{5}{6}$, find $\cos A\cos C-\sin A\sin C$

(i) $\frac{1}{6}\sqrt{61}$ (ii) $\frac{6}{61}\sqrt{61}$ (iii) $\frac{1}{5}\sqrt{61}$ (iv) 0 (v) $\frac{5}{61}\sqrt{61}$

10. If $\cot\theta=\frac{5}{9}$, find $\frac{(1+\sin\theta)(1-\sin\theta)}{(1-\cos\theta)(1+\cos\theta)}$

(i) $\frac{25}{81}$ (ii) $\frac{1}{3}$ (iii) $\frac{25}{79}$ (iv) $\frac{25}{83}$ (v) $\frac{23}{81}$

11. If $\tan\theta=\frac{1}{8}$, find $\frac{(1+\cos\theta)(1-\cos\theta)}{(1+\sin\theta)(1-\sin\theta)}$

(i) $\frac{1}{66}$ (ii) $\frac{1}{62}$ (iii) $\frac{3}{64}$ (iv) $\frac{1}{64}$ (v) $(\frac{-1}{64})$

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

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

13. Find the value of $10\sec^2\theta-10\tan^2\theta$

(i) 7 (ii) 1 (iii) 0 (iv) 12 (v) 10

14. If $\tan\theta+\cot\theta=5$, find $\tan^2\theta+\cot^2\theta$

(i) 23 (ii) 26 (iii) 24 (iv) 22 (v) 20

15. If $\tan\theta-\cot\theta=8$, find $\tan^2\theta+\cot^2\theta$

(i) 65 (ii) 66 (iii) 64 (iv) 69 (v) 67

16. If $\sin 5x = \cos((x+36))$, then $x =$

(i) 10 (ii) 8 (iii) 9 (iv) 7 (v) 11

17. If $\cos 4x = \sin((x+55))$, then $x =$

(i) 6 (ii) 8 (iii) 5 (iv) 10 (v) 7

18. If $\tan 5x = \cot((x+54))$, then $x =$

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

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

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

20. If $\sec 4x = \operatorname{cosec}((x+30))$, then $x =$

(i) 14 (ii) 10 (iii) 11 (iv) 12 (v) 13

21. If $\operatorname{cosec} 5x = \sec((x+30))$, then $x =$

(i) 9 (ii) 13 (iii) 8 (iv) 11 (v) 10

22. If T, U and V are the interior angles of a triangle, then $\sin(\frac{T+U}{2}) =$

(i) $\sin V$ (ii) $\sin(\frac{T}{2})$ (iii) $\cos(\frac{V}{2})$ (iv) $\sin(\frac{V}{2})$ (v) $\cos(\frac{T}{2})$

23. Which of the following are true?

a) $\sin 29° = \cos 61°$
b) $\tan 54° = \cot 36°$
c) $\sec 36° = \operatorname{cosec} 54°$
d) $\sin 32° = \cos 58°$
e) $\sin 59° = \cos 31°$
f) $\sin 23° = \cos 23°$
g) $\cos 25° = \sin 25°$

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

24. Which of the following are true?

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

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

25. Which of the following are true?

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

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

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

d) $\cos\theta = \frac{1}{\mathrm{cosec}\,\theta}$

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

f) $\mathrm{cosec}\,\theta = \frac{1}{\sin\theta}$

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

26. Which of the following are true?

a) $\cos 90° = 1$
b) $\sin 90° = 1$
c) $\cos 0° = 1$
d) $\cos 45° = 1$
e) $\tan 90° = 1$
f) $\tan 0° = 1$
g) $\sin 45° = 1$
h) $\sin 0° = 1$

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

27. Which of the following are true?

a) $\cos 0° = 0$
b) $\sin 90° = 0$
c) $\sin 0° = 0$
d) $\tan 90° = 0$
e) $\tan 0° = 0$
f) $\sin 45° = 0$
g) $\cos 45° = 0$
h) $\cos 90° = 0$

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

28. Which of the following are true?

a) $\cot(90+\theta) = -\tan\theta$
b) $\sec(90+\theta) = -\operatorname{cosec}\theta$
c) $\sec(90+\theta) = -\sec\theta$
d) $\cot(90+\theta) = -\cot\theta$
e) $\operatorname{cosec}(90+\theta) = \sec\theta$
f) $\operatorname{cosec}(90+\theta) = -\operatorname{cosec}\theta$

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

29. Which of the following are true?

a) $\sin(90+\theta) = -\sin\theta$
b) $\sin(90+\theta) = \cos\theta$
c) $\tan(90+\theta) = -\tan\theta$
d) $\tan(90+\theta) = -\cot\theta$
e) $\cos(90+\theta) = -\sin\theta$
f) $\cos(90+\theta) = -\cos\theta$

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

30. Which of the following are true?

a) $\cos(-\theta) = -\cos\theta$
b) $\sin(-\theta) = -\sin\theta$
c) $\sin(-\theta) = \sin\theta$
d) $\tan(-\theta) = \tan\theta$
e) $\cos(-\theta) = \cos\theta$
f) $\tan(-\theta) = -\tan\theta$

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

31. Which of the following are true?

a) $\operatorname{cosec}(-\theta) = -\operatorname{cosec}\theta$
b) $\sec(-\theta) = \sec\theta$
c) $\operatorname{cosec}(-\theta) = \operatorname{cosec}\theta$
d) $\sec(-\theta) = -\sec\theta$
e) $\cot(-\theta) = \cot\theta$
f) $\cot(-\theta) = -\cot\theta$

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

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

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

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

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

34.

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

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

c) $(w^2 - x^2) = e^2$

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

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

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

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

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

Assignment Key

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