Work Sheet- 1 for class- Nine
Chapter- Nine
Exercise-9.1
Trigonometric Ratio

Creative Multiplication Choice Questions

1. If $\sin\theta = \frac{1}{2}$ then $\tan\theta$ = What? [D.B.- 20, R.B.- 20]

a) $\frac{1}{\sqrt{3}}$ b) $\frac{1}{\sqrt{2}}$

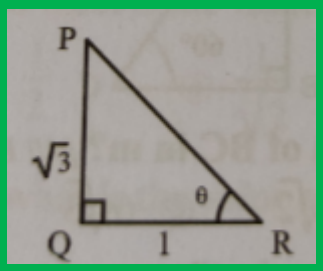
c) $\frac{\sqrt{3}}{2}$ d) $\sqrt{3}$

2. If 4secA = 5 then sinA = What? [C.B.- 20]

a) $\frac{25}{16}$ b) $\frac{4}{5}$

c) $\frac{3}{5}$ d) $\frac{9}{25}$

3.

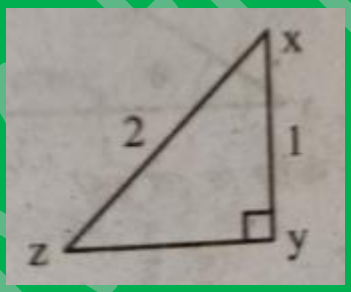


In figure then find the value of $\sin\theta\sec\theta$. [Ctg.B.- 20]

a) $\frac{1}{\sqrt{3}}$ b) $\sqrt{3}$

c) 1 d) $\frac{2}{\sqrt{3}}$

4.



In figure – [Ctg.B.- 20]

i. Cosx = sinz

ii. Cotz = $\frac{\sqrt{3}}{2}$

iii. Secx – cosx = $\frac{3}{2}$

Which one of the following is correct?

a) i and ii b) i and iii

c) ii and iii d) i, ii and iii

5. $\cot x\sqrt{1-\cos^2 x}$ = What? [Ctg.B.- 20]

a) sinx b) tanx

c) secx d) cosx

6. If cosecA – cotA = $\frac{1}{2}$ then cosecA + cotA = What? [S.B.- 20]

a) $\frac{-1}{x}$ b) $\frac{1}{x}$

c) X d) $\frac{x^2+1}{x}$

7. If tanA = $\frac{4}{3}$ then secA = What? [S.B.- 20]

a) $\frac{3}{5}$ b) $\frac{5}{3}$

c) $\frac{3}{4}$ d) $\frac{4}{5}$

8. $\frac{1}{\sqrt{1+\tan^2\theta}}$ = What? [B.B.- 20]

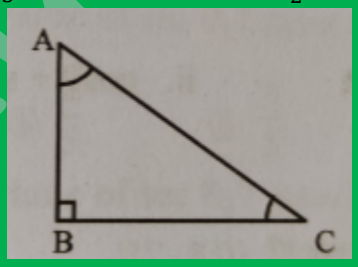
a) $\operatorname{cosec}\theta$ b) $\sec\theta$

c) $\cos\theta$ d) $\sin\theta$

9. If $\operatorname{cosec}\theta + \cot\theta = \frac{3}{2}$ then $\cot\theta - \operatorname{cosec}\theta$ = What? [B.B.- 20]

a) $\frac{-3}{2}$ b) $\frac{-2}{3}$

c) $\frac{2}{3}$ d) $\frac{3}{2}$



On the basis of the above stem answer questions No. (9 – 10) when AB = 1 and BC = $\sqrt{3}$.

10. Which one is the value of 2∠C? [Dj.B.- 20]

a) 30^0 b) 45^0

c) 60^0 d) 90^0

11. In the case of ΔABC then – [Dj.B.- 20]

i. secA = cosecA

ii. cosA + secA = $\frac{5}{2}$

iii. tanC = $\frac{1}{\sqrt{3}}$

Which one of the following is correct?

a) i and ii b) i and iii

c) ii and iii d) i, ii and iii

12. In case of Trigonometric ration - [D.B.- 19]

i. $\tan 30° \cot 30° = 1$

ii. $\sec^2 60° - \tan^2 60° = 1$

iii. $\tan\theta\sqrt{1-\sin^2\theta} = \sin\theta$

Which one of the following is correct?

a) i and ii b) i and iii
c) ii and iii d) i, ii and iii

13. If $\text{cosec}\theta + \cot\theta = \frac{1}{2}$ then $\text{cosec}\theta - \cot\theta$ = What? [R.B.- 19]

a) 2 b) 1
c) -1 d) -2

14. If $\tan\theta = \frac{3}{4}$ then $sec^2\theta$ = What? [R.B.- 19]

a) $\frac{9}{16}$ b) $\frac{16}{25}$
c) $\frac{25}{16}$ d) $\frac{9}{25}$

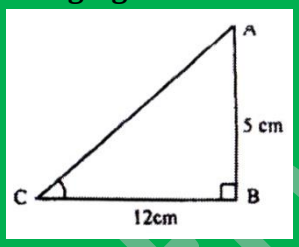
15. In $\Delta PQR, \angle Q = 1$ right angle, $\angle PRQ = 60°$ and PQ = 8 cm then QR = What? [R.B.- 19]

a) 4 cm b) $4\sqrt{3}$ cm
c) $4\sqrt{5}$ cm d) 16 cm

16. In $\tan A = 1$ then what is value of $cosA$? [C.B.- 19]

a) $\frac{1}{\sqrt{2}}$ b) $\frac{1}{2}$
c) $\sqrt{2}$ d) 2

Answer the questions no. (16 – 17) from the following figure:



17. What is the value of $cosC$ = What? [C.B.- 19]

a) $\frac{5}{13}$ b) $\frac{12}{13}$
c) $\frac{13}{12}$ d) $\frac{13}{5}$

18. cotA + tanC = What? [C.B.- 19]

a) $\frac{5}{6}$ b) $\frac{3}{2}$
c) $\frac{181}{65}$ d) $\frac{169}{60}$

19. $\sec\theta\sqrt{1 - \cos^2\theta}$ = What? [C.B.- 19]

a) $\sin\theta$ b) $\cos\theta$
c) $\tan\theta$ d) $\cot\theta$

20. In $\cot\theta - \text{cosec}\theta = \frac{4}{3}$ then the value of $\text{cosec}\theta + \cot\theta$ = What? [S.B.- 19, R.B.- 16]

a) $-\frac{3}{4}$ b) $-\frac{4}{3}$
c) $\frac{4}{3}$ d) $\frac{3}{4}$

21. If A = 30° then what is value of tanA. tan2A. [J.B.- 19]

a) 0 b) $\frac{1}{\sqrt{3}}$
c) $\sqrt{3}$ d) 1

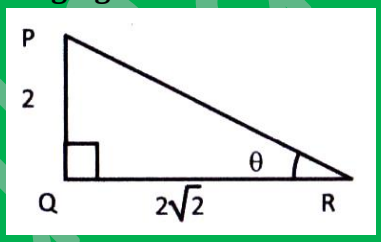
22. If $A = 15°$ then - [Ctg.B.- 19]

i. $\tan 3A = \sqrt{2}\sin 3A$
ii. $\cot 4A = \frac{1}{\sqrt{3}}$
iii. $\sin 4A = \cos 2A$

Which one of the following is correct?

a) i and ii b) i and iii
c) ii and iii d) i, ii and iii

Answer the questions no. (23 – 24) from the following figure:



23. Which one of the following is the value of cos θ = What? [Ctg.B.- 19]

a) $\frac{1}{\sqrt{2}}$ b) $\sqrt{\frac{2}{3}}$
c) $\sqrt{\frac{3}{2}}$ d) $\frac{\sqrt{3}}{2}$

24. Which one of the following is the value of $\frac{\tan^2\theta + 1}{\text{cosec}^2\theta - 1}$ = What? [Ctg.B.- 19]

a) $\frac{3}{4}$ b) $\frac{4}{3}$
c) $\frac{3}{2}$ d) $\frac{9}{4}$

25. If tanA = $\frac{4}{3}$ then what is the value of secA? [All B.- 18]

a) $\frac{3}{4}$ b) $\frac{4}{5}$
c) $\frac{5}{4}$ d) $\frac{5}{3}$

26. In case of Trigonometry- [All B.- 18]

i. $\sec^2\theta + \tan^2\theta = 1$
ii. $\cot^2\theta = 1 + \text{cosec}^2\theta$
iii. $\cos^2\theta = 1 - \sin^2\theta$

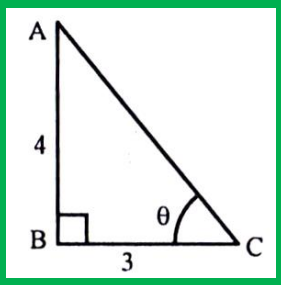
Which one of the following is correct?

a) I b) iii
c) ii and iii d) i, ii and iii

27. If $\tan\theta = \frac{4}{3}$ then $\text{cosec}\theta$ = What? [D.B.- 17]

a) $\frac{4}{3}$ b) $\frac{5}{4}$
c) $\frac{4}{5}$ d) $\frac{3}{5}$

28.



What is the value of tanθ?[Ctg.B.- 17]

a) $\frac{3}{5}$ b) $\frac{3}{4}$
c) $\frac{4}{5}$ d) $\frac{4}{3}$

29. If $\tan\theta = \frac{5}{2}$ then what is the value of $\cot^2\theta$? [S.B.- 17]

a) $\frac{29}{4}$ b) $\frac{25}{4}$
c) $\frac{4}{25}$ d) $\frac{4}{29}$

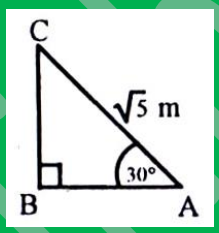
30. In trigonometry relation- [S.B.- 17]

i. $\sin(90° - \theta) = \sin\theta$
ii. $\sec^2\theta - \tan^2\theta = 1$
iii. $\sin^2\theta + \cos^2\theta = 1$

Which one of the following is correct?

a) i and ii b) i and iii
c) ii and iii d) i, ii and iii

31.



According to figure then what is the value of BC? [D.B.- 16]

a) 1.118 m b) 1.811m
c) 2.236 m d) 4.472 m

32. If $\sin\theta = \frac{\sqrt{3}}{2}$ then what is the value of tanθ? [D.B.- 16]

a) $\sqrt{3}$ b) $3\sqrt{3}$
c) $\frac{\sqrt{3}}{\sqrt{7}}$ d) $\frac{1}{\sqrt{3}}$

33. If $\text{cosec}\theta = \frac{a}{b}$ then what is the value of tanθ? [D.B.- 16]

a) $\frac{b}{\sqrt{a^2 - b^2}}$ b) $\frac{\sqrt{a^2 - b^2}}{b}$
c) $\frac{\sqrt{a^2 + b^2}}{b}$ d) $\frac{b}{\sqrt{a^2 + b^2}}$

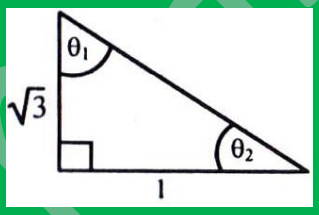
34. What is the value of $\sec 45° \div \cos 45°$? [S.B.- 16]

a) $-\sqrt{2}$ b) -1
c) 1 d) 2

35. What is the value of $\sec^2\theta - \tan^2\theta + \frac{1}{2}$? [S.B.- 16]

a) $-\frac{3}{2}$ b) $-\frac{1}{2}$
c) $\frac{1}{2}$ d) $\frac{3}{2}$

Answer the questions No. (36 – 37) according to the following figure:



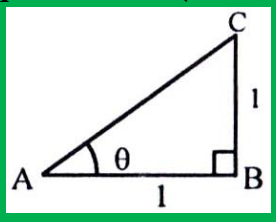
36. What is the value of $\tan\theta_1$? [Ctg.B.- 16]

a) 0 b) $\frac{1}{\sqrt{3}}$
c) 1 d) $\sqrt{3}$

37. $\sin\theta_2$ = What? [Ctg.B.- 16]

a) $\sqrt{3}$ b) $\frac{2}{\sqrt{3}}$
c) $\frac{\sqrt{3}}{2}$ d) $\frac{1}{\sqrt{3}}$

According to the figure below answer to the questions no. (38 – 39):



38. The value of $\sin\theta$ = What? [J.B.- 16]

a) $\frac{1}{\sqrt{2}}$ b) $\frac{1}{2}$
c) 1 d) $\sqrt{2}$

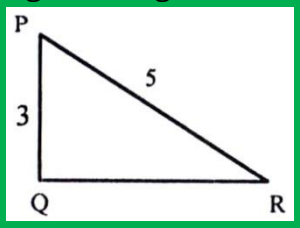
39. In figure – [J.B.- 16]

i. $AC = \sqrt{2}$
ii. $\tan\theta = 1$
iii. $\text{cosec}^2\theta - \cot^2\theta = 1$

Which one of the following is correct?

a) i and ii b) i and iii
c) ii and iii d) i, ii and iii

Answer to the question no. (40 – 41) according to the figure:



40. **What is the value of cosθ? [R.B.- 15]**

a) $\frac{3}{5}$ b) $\frac{3}{4}$

c) $\frac{4}{5}$ d) $\frac{5}{4}$

41. **Which one is the value of $\frac{\tan^2\theta+1}{\sin^2\theta-1}$? [R.B.- 15]**

a) $\frac{-35}{8}$ b) -2.44

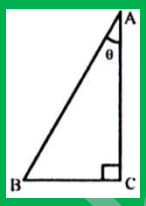
c) -1 d) 1.56

42. **What is the mutual relation of trigonometric ratios of acute angle? [D.B.- 15]**

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

c) $\tan\theta = \frac{\sin\theta}{\cos\theta}$ d) $\cot\theta = \frac{1}{\text{cosec}\theta}$

43.



In the above figure cos θ- [D.B.- 15]

a) $\frac{AC}{AB}$ b) $\frac{BC}{AB}$

c) $\frac{AB}{BC}$ d) $\frac{AB}{AC}$

44. **Which law is correct? [R.B.- 15]**

a) $\tan^2\theta = 1 - \sec^2\theta$

b) $\text{cosec}^2\theta - \tan^2\theta = 1$

c) $\sin^2\theta - \cos^2\theta = 1$

d) $\frac{1}{\text{cosec}^2\theta} + \frac{1}{\sec^2\theta} = 1$

45. **If $\tan\theta = \frac{3}{4}$ than $\cos^2\theta$ = What? [Ctg.B.- 15]**

a) $\frac{16}{9}$ b) $\frac{25}{60}$

c) $\frac{9}{16}$ d) $\frac{16}{25}$

46. **If $\sec\theta + \tan\theta = \frac{5}{2}$ than $\sec\theta - \tan\theta$ = What? [S.B.- 15]**

a) $\frac{2}{3}$ b) $\frac{3}{5}$

c) $\frac{5}{6}$ d) $\frac{4}{5}$

47. **In $\Delta ABC, \angle B = 90°$, AB = 3 cm, BC = 4 cm. What is the value of sinC? [J.B.- 15]**

a) $\frac{5}{3}$ b) $\frac{4}{50}$

c) $\frac{3}{4}$ d) $\frac{3}{5}$

48. **$\text{cosec}\theta + \cot\theta = \frac{5}{6}$ than $\text{cosec}\theta - \cot\theta$ = What? [B.B.- 15]**

a) $\frac{1}{6}$ b) $\frac{5}{6}$

c) 1 d) $\frac{6}{3}$

49. **In trigonometry ratio – [Ctg.B.- 15]**

i. $\text{cosec}^2\theta = 1 - \cot^2\theta$

ii. $\sec^2\theta - \tan^2\theta = 1$

iii. $\cos^2\theta = 1 - \sin^2\theta$

Which one of the following is correct?

a) ii b) iii

c) ii and iii d) i, ii and iii

50. **In the relation trigonometry [B.B.- 15]**

i. $\sin^2\theta = 1 - \cos^2\theta$

ii. $\sec^2\theta = 1 + \tan^2\theta$

iii. $\text{cosec}^2\theta = 1 - \tan^2\theta$

Which one of the following is correct?

a) i and ii b) i and iii

c) ii and iii d) i, ii and iii

51. **In trigonometry ratio – [C.B.- 15]**

i. $\sin^2\theta = 1 + \cos^2\theta$

ii. $\sec^2\theta = 1 + \tan^2\theta$

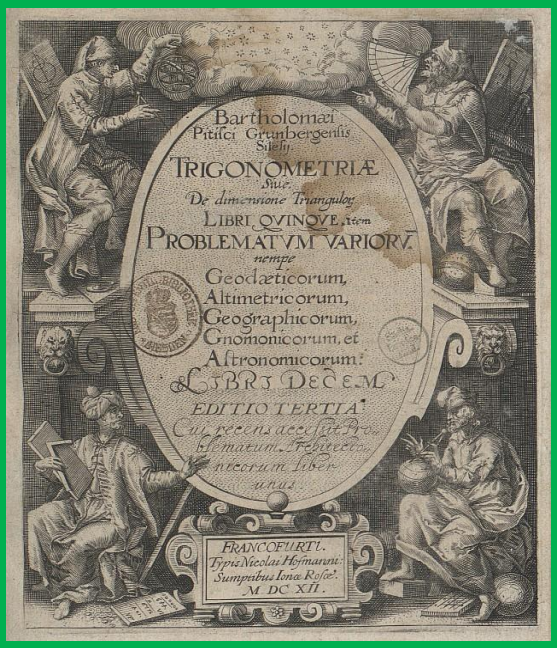
iii. $\text{cosec}^2\theta = 1 + \cot^2\theta$

Which one of the following is correct?

a) i and ii b) i and iii

c) ii and iii d) i, ii and iii

Basic Information:



- ❖ Bartholomaeus Pitiscus (1561 – 1613) was a German Trigonometrician, Astronomist and Theologist.
- ❖ His famous writing is “Ca: sive de solution triangulorum tractatus brevis et perspicuous”.
- ❖ He first uses this word Trigonometry.
- ❖ He developed Trigonometric table of Rheticus.

- ➢ Muhammad Ibn Musa Al-Khwarizmi (780 -850) was a Physicist, Astrophysicist and Geographer.
- ➢ Algebra word was taken from his book Al Jabr Wa Al Muqabalah.
- ➢ This is the first book of algebra where Linear and Quadratic Equations are solved.
- ➢ He invented Sine and Cosine function table.

- ✓ One of the ancient topics of Mathematics is Trigonometry.
- ✓ It’s been used in Astrophysics since ancient time.
- ✓ It was first used in Shadow Stick, which is used to measure velocity of Sun and Time.
- ✓ Later on, many Clocks were invented using Trigonometry which cloud be used to determine Time by Stars.
- ✓ For example, Gonon Circle, Merkhet etc.
- ✓ Trigonometry is also used for Altitude and Longitude measurement.
- ✓ Concept of trigonometry helped Astrophysicists to determine Season, which helped them prevent Flood, Draught, Cyclone etc.