# Fundamentals of Trigonometry

1. Direction of Qibla is found by using ….

   a) Plane Geometry
   b) Spherical Trigonometry
   c) Plane Trigonometry
   d) Analytical Geometry
   e) None of these

2. If a circle is divided into 360 parts, then the angle subtended by each part at the center of the circle is called _____

   a) 1 radian
   b) 1 degree
   c) 1 angstrom
   d) 1 minute
   e) None of these

3. The union of two non-collinear rays which have a common endpoint is called the …..

   a) Angle
   b) Radian
   c) Degree
   d) Minute
   e) Second

4. One degree is denoted by _____

   a) 1 rad
   b) 1'
   c) 1"
   d) 1°
   e) None of these

5. 1rt. angle = _____

   a) 90°
   b) 180°
   c) 270°
   d) 190°
   e) None of these

6. The 60th part of one degree is called one

   a) centimeter
   b) radian
   c) degree
   d) minute
   e) none of these

7. Measure of the central angle of an are of a circle whose length is equal to the radius of the circle is known as _____

   a) 1 degree
   b) 1 radian
   c) 1 rt. angle
   d) All of these
   e) None of these

8. The circumference of a circle r is considered as _____

   a) $2\pi r$
   b) πr
   c) $3\pi r$
   d) $4\pi r$
   e) None of these

9. 1 radian = _____

   a) $57°17'45''$
   b) 47°
   c) 37°
   d) 38°
   e) None of these

10. 1° = _____

   a) $60'$
   b) $60''$
   c) $3600'$
   d) $360'$
   e) None of these

11. In the given figure if C is the center of the circle, then angle θ is _____
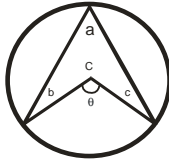
    a) 2a
    b) a + b
    c) a + b + c
    d) 2π - a
    e) 2b – 2c

12. The 60th part of one minute is called one ...

    a) centimeter
    b) radian
    c) degree
    d) minute
    e) second

13. $180° = $ _____
    a) π radian
    b) 2π radian
    c) $\pi/2$
    d) $3\pi/4$
    e) None of these

14. An arc PQ is subtends and angle 60o at the center of a circle of radius 1 cm. The length PQ is _____
    a) 60 cm
    b) 30 cm
    c) $\pi/6$ cm
    d) $\pi/3$ cm
    e) $\pi/18$ cm

15. One second is denoted by _____

    a) 1 rad
    b) 1′
    c) 1″
    d) 1°
    e) None of these

16. $\dfrac{\pi}{4} = $ _____

    a) 30°
    b) 60°
    c) 90°
    d) 220°
    e) None of these

17. If $\theta = \dfrac{\pi}{6}$, $Cos\theta$ is _____

    a) $\dfrac{1}{2}$
    b) $-\dfrac{1}{2}$
    c) $\dfrac{\sqrt{3}}{2}$
    d) $-\dfrac{\sqrt{3}}{2}$
    e) $\dfrac{\sqrt{2}}{2}$

18. In the given figure the angle θ is ……..
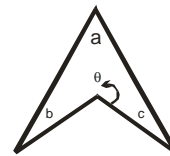
    a) $2\pi - a$
    b) $2\pi - (a+b)$
    c) $2\pi - (a+b+c)$
    d) a + b + c
    e) 2d – 2b

19. $1' = $ …………
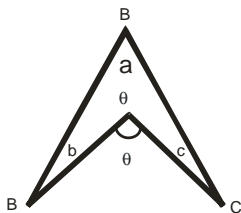
    a) 60°
    b) $60''$
    c) $3600''$
    d) 3600°
    e) None of these

20. What is the length of an arc of a circle of radius 5cm, whose central angle is of 140°

    a) 2.443 radians
    b) 1.443 radians

    c) 0.443 radians
    d) 2 radians
    e) None of these
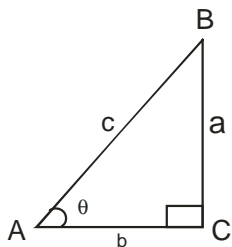
21.   In the given figure the angle a + b + c is

    a) $< \text{BDC} = \theta$
    b) $\pi - \theta$
    c) $2\pi - \theta$
    d) $2\pi + \theta$
    e) $< \text{B}$

22.   Two right angles are the angle of measure

    a) $180''$
    b) $180'$
    c) 60°
    d) 90°
    e) 180°

23.   For a right angled triangle ABC as shown in the figure we have Sin θ = _____
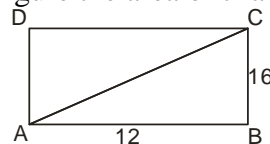

    a) a/c
    b) c/a
    c) c/b
    d) b/c
    e) None of these

24.   Four right angles are the angle of measure
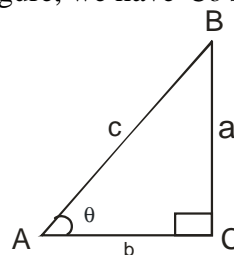
    a) 90°
    b) 180°
    c) 270°
    d) 360°
    e) $360'$

25.   In the figure the area of triangle ABC is

    a) 28
    b) 32
    c) 96
    d) 192
    e) 182

26.   For a right angled triangle ABC as shown in the figure, we have $Co\sec\theta = $ _____

    a) c/a
    b) c/b
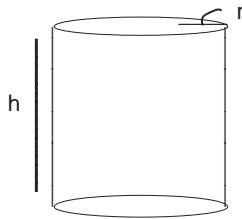   c) b/c
    d) $+c/{-c}$
    e) None of these

27.   The system of measurement in which the angle is measured in degrees, and its subunits, minutes and seconds is called

    a) Circular system
    b) Sexagesimal system
    c) MKS system
    d) CGS system
    e) None of these

28. $Cot\theta = $ _____

    a) $\dfrac{Sin\theta}{Cos\theta}$
    b) $\dfrac{Cos\theta}{Sin\theta}$
    c) $\dfrac{1}{Sin\theta}$
    d) $\dfrac{1}{Cos\theta}$
    e) None of these

29. In the figure the surface area (shaded) of right circular cylinder is

    a) $2\pi r^2 + 2\pi rh$
    b) $2\pi r + \pi r^2 h$
    c) $2\pi r^2$
    d) πrh
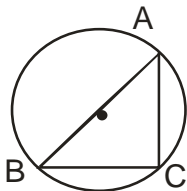   e) $2\pi rh$

30. The system of measurement in which the angle is measured in radians is called …..

    a) Circular system
    b) Sexagesimal system
    c) MKS system
    d) CGS system
    e) None of these

31. $Sec\,\theta = $ _____

    a) $\dfrac{Sin\,\theta}{Cos\,\theta}$
    b) $\dfrac{Cos\,\theta}{Cos\,\theta}$
    c) $\dfrac{1}{Sin\,\theta}$
    d) $\dfrac{1}{Cos\,\theta}$
    e) None of these

32. In the figure, the shaded area is given by

    a) $25\pi/4 - 6$
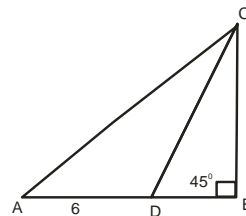   b) $5\pi - 6$
    c) $25/4\pi$
    d) 6
    e) 7π

33. $16°40'38'' = $

    a) $140°$
    b) $17°$
    c) $16°$
    d) $60038'$
    e) $60038''$

34. $Sin^2\theta + Cos^2\theta = $…., for all values of θ.
    a) 1
    b) 0
    c) $1 + Tan^2\theta$
    d) -1
    e) None of these

35. In the figure the length of AB is

    a) 7
    b) $6 + \sqrt{2}$
    c) $6 + 2\sqrt{2}$
    d) 12
    e) 13

36. $16° = $ _____

    a) $960°$
    b) $960'$
    c) $57600'$
    d) $60038'$
    e) $60038''$

37. In the figure the angle A is (AB = AC = X)
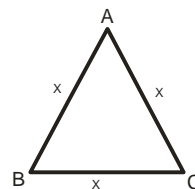
    a) $50°$
    b) $60°$
    c) $90°$
    d) $120°$
    e) $180°$

38. Two right angles are equal to

    a) $180'$
    b) $180''$
    c) $648000'$
    d) $10800''$
    e) $10800'$

39. The associated angle of 280° is
    a) 100°
    b) 10°
    c) 80°
    d) -80°
    e) 190°

40. Cot $180^\circ =$ _____
    a) 1
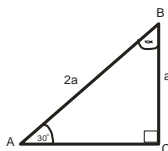   b) O
    c) -1
    d) ∞
    e) -11

41. A radian is the measure of the central angle of an arc of a circle whose length is equal to the
    a) half of radius of the circle
    b) diameter of the circle
    c) radius of the circle
    d) one third of radius of the circle
    e) none of these

42. Sec $180^\circ =$ _____

    a) 1
    b) 0
    c) -1
    d) ∞
    e) None of these

43. In the $\triangle$ABC the angle α is
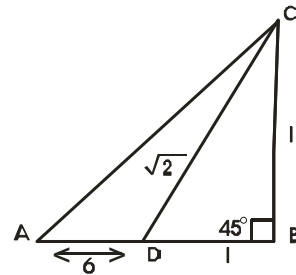

    a) 30°
    b) 45°
    c) 60°
    d) 90°
    e) 180°

44. The central angle of an arc of a circle whose length is equal to the radius of the circle is called the

    a) degree
    b) radian
    c) minute
    d) second
    e) none of these

45. $\dfrac{c}{b}$ In the $\triangle$ABC the angle γ is
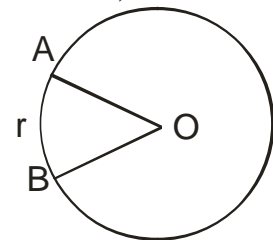

    a) 30°
    b) 45°
    c) 45°
    d) 90°
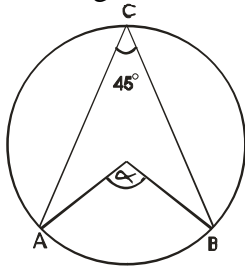   e) 120°

46. Cosec $180^\circ =$ _____?
    a) 1
    b) 0
    c) -1
    d) ∞
    e) 2^{-1}

47. if r is the radius, $m < AOB =$

    a) 1 radian
    b) 1 degree
    c) 1 minute
    d) 1 second
    e) None of these

48.   In the figure the angle α is

a) 45°
b) 60°
c) 75°
d) 90°
e) -90°
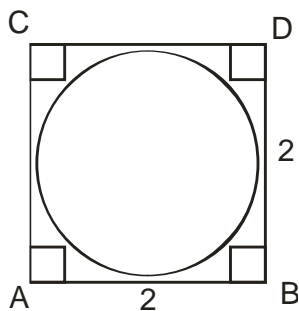
49.   One minute is denoted by
a) 1rad
b) $1'$
c) $1''$
d) 1°
e) None of these

50.   Cos 270° =___?
a) 1
b) 0
c) -1
d) ∞
e) $0-2$

51. The area of the shaded portion in the figure is

a) $4-\pi$
b) $4-2\pi$
c) 4π
d) 4
e) 4π - 2

52   Tan 270° = _____?
a) 1
b) 0
c) -1
d) ∞
e) $\pi-2$

53 $1^o =$
a) 1 radian
b) 0.01745 radian
c) 0.5 radian
d) 2.5 radian
e) 1.01745 radian

54 Tan 30° = _____?
a) $\dfrac{1}{\sqrt{3}}$
b) $\dfrac{\sqrt{3}}{2}$
c) $\dfrac{1}{2}$
d) $\dfrac{1}{\sqrt{2}}$
e) $-\dfrac{1}{\sqrt{2}}$

55   If an arc of length l of circle of radius r subtends an angle θ radian at the center, then $l =$
a) $\dfrac{1}{r\theta}$
b) $\dfrac{r}{\theta}$
c) $\dfrac{\theta}{r}$
d) $r\theta$
e) None of these

56   In the figure the angle α is

a) 60°
b) 120°
c) 180°
d) 240°
e) 290°
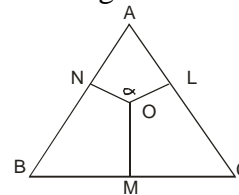
57   In the first quadrant $Sin\theta$ is _____

a) positive
b) negative
c) both
d) not defined
e) none of these

58   In the figure the length of LM is

   a) x
   b) 2x
   c) 3x
   d) 4x
   e) 8π

59.   Convert $\left(\dfrac{180}{\pi}\right)^{\circ}$ to radians

   a) 0.94 radians
   b) 1 radians
   c) 3.97 radians
   d) 4.57 radians
   e) 3.54 radians

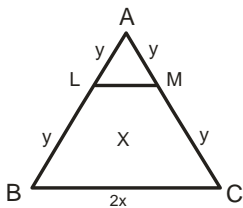60. $1^{\circ} = \ldots\ldots\ldots\ldots$

   a) $\dfrac{\pi}{180}$ radians
   b) $\dfrac{180}{\pi}$ radians
   c) $\dfrac{1}{180\pi}$ radians
   d) 180π radians
   e) π radians

61    $\left(22\dfrac{1}{2}\right)^{\circ} =$

   a) $\pi/2$ radians
   b) $\pi/4$ radians
   c) $\pi/8$ radians
   d) 180π radians
   e) π radians

62.   Convert radian measure $\dfrac{4}{3\pi}$ to degree

   a) 24.32°
   b) 24.97°
   c) 4.96°
   d) 1.97°
   e) 23.42°

63.   With usual notations, $\theta = \underline{\hspace{1cm}}$

   a) $1/\varphi$
   b) $1/r$
   c) r/l
   d) φ/r
   e) r/φ

64. $\dfrac{5\pi}{4}$ radians =

   a) 360°
   b) 335°
   c) 270°
   d) 225°
   e) 125°

65.   The radian measure of the angle at the center of circle of radius 12cm which cuts off an arc 18cm long.

   a) 9.47 radians
   b) 1.19 radians
   c) 1.5 radians
   d) 2.5 radians
   e) None of these

66. $150^{\circ} =$

   a) $5\pi/6$ radians
   b) $2\pi/3$ radians
   c) $\pi/4$ radians
   d) 180π radians
   e) π radians

67.   The length of the arc cut off on a circle of radius 6cm by a central angle of $2\pi/3$ radians

   a) 12.566cm
   b) 10.033cm
   c) 12.113cm
   d) 9.156cm
   e) 6.56cm

68. $80^o =$

a) $\dfrac{5\pi}{6}$ radians

b) $\dfrac{4\pi}{9}$ radians

c) $\dfrac{\pi}{4}$ radians

d) 180π radians

e) π radians

69. The radius of the circle when l = 3cm, $\theta =$ 3.4 radians.

a) 0.214 cm
b) 9.419 cm
c) 3.146 cm
d) 4.978 cm
e) None of these

70. In one hour, the minutes hand of a clock turns through

a) $5\pi/6$ radians

b) $4\pi/9$ radians

c) $\pi/4$ radians

d) 180π radians

e) 2π radians
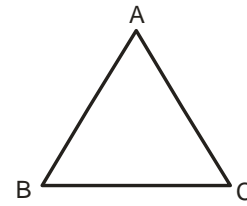
71. In the second quadrant $Sin\theta$ is _____

a) positive
b) negative
c) both
d) not defined
e) none of these

72. In one hour, the hours hand of a clock turns through

a) $\pi/12$ radians

b) $\pi/8$ radians

c) $\pi/8$ radians

d) π radians

e) 2π radians

73. If the measure of two angles of a ΔABC is 30° and 70° then the 3rd angle is

a) 30°
b) 70°
c) 80°
d) 100°
e) 210°

74. In one hour, the minutes hand of a clock turns through

a) 360°
b) 180°
c) 90°
d) 60°
e) 30°

75. $Sin\theta = \dfrac{Perpendicular}{?}$

a) base
b) hypotenuse
c) cos θ
d) tan θ
e) none of these

76. In 15 minutes, the minutes hand of a clock turns through

a) 360°
b) 180°
c) 90°
d) 60°
e) 30°

77. $Cos\theta = \dfrac{1}{?}$

a) sin θ
b) tan θ
c) cos θ
d) sec θ
e) none of these

78.   In the 2nd quadrant $Sec\,\theta$ is _____?

    a) positive
    b) negative
    c) both
    d) not defined
    e) -1

79.   In the 2nd quadrant $Cot\,\theta$ is _____ ?

    a) positive
    b) negative
    c) both
    d) not defined
    e) <1

80.   In 15 minutes the hours hand of a clock turns through

    a) 7.5^{o}
    b) 15°
    c) 30°
    d) 60°
    e) 120°

81.   The radian measure of the central angle of an arc 50cm log on a circle of radius 25m is

    a) 3
    b) 2
    c) 1
    d) 0.5
    e) None of these

82.   In the 3rd quadrant $Sin\,\theta$ is _____ ?

    a) positive
    b) negative
    c) both
    d) not defined
    e) None of these

83.   Two cities whose longitudes are 30°E and 40°W on the equator are apart

    a) 1000 km
    b) 2000 km
    c) 2500 km
    d) 3351 km
    e) 7819.09 km

84. $Co\sec\theta = \dfrac{1}{?}$

    a) $\cot\theta$
    b) $\tan\theta$
    c) $\sin\theta$
    d) $\sec^{2}\theta$
    e) $1-\sin\theta$

85.   Two cities whose longitudes are 10°E and 20°W on the equator are apart.

    a) 1000 km
    b) 2000 km
    c) 2500 km
    d) 3351 km
    e) 6702 km

86.   In the 3rd quadrant $Cosec\,\theta$ is _____ ?

    a) positive
    b) negative
    c) both
    d) 0
    e) None of these

87.   A railway train is running on a circular track of radius 500 meters at the rate of 30 km per hour, it will turn in 10 seconds through an angle.

    a) $4^{\circ}46'28''$
    b) $9^{\circ}32'57''$
    c) $18^{\circ}46'28''$
    d) 30°
    e) 60°

88.   The pendulum of a clock is 30 cm long and it swings through an angle of 30° each second. How far does the tip of the pendulum move in 1 second.

    a) 10 cm
    b) 15.71 cm
    c) 20.94 cm
    d) 28.65 cm
    e) 40 cm

89.   A railway train is running on a circular track of radius 1000 meters at the rate of 30 km per hour, it will turn in 10 seconds through an angle

a) $4°46'28''$
b) $9°32'57''$
c) $18°46'28''$
d) $30°$
e) $60°$

90.   The pendulum of a clock is 40cm long and it swings through an angle of $30°$ each second. How far does the tip of the pendulum move in 1 seconds?

a)   10cm
b)   15.71cm
c)   20.94cm
d)   28.65cm
e)   40cm

91. In the fourth quadrant Cosec θ is _____?

a)   positive
b)   negative
c)   both
d)   0
e)   None of these

92.   A circular wire of radius 2cm is cut straightened and then bent so as to lie along the circumference of a hoop of radius 24cm. the measure of the angle subtended at the center of the hoop is

a) $15°$
b) $30°$
c) $25°$
d) $60°$
e) $90°$

93. $\sec^2\theta - \tan^2\theta = $ _____

a) -1
b) $\csc\theta$
c) $\tan\theta$
d) 1
e) -11

94.   The area of a sector of a circular region of radius r and the central angle of the sector θ radians is

a) $\frac{1}{2}r\theta^2$

b) $\frac{1}{2}r^2\theta$

c) $\frac{1}{2}r\theta$

d) $r^2\theta$

e) $r\theta^2$

95.   The area of a sector with a central angle of 1 radian in a circular region whose radius is 2m.
a) $2m^2$
b) $1m^2$
c) $0.5m^2$

d) $\frac{\pi}{6}m^2$

e) $\frac{\pi}{3}m^2$

96.   The area of a sector with a central angle of 0.5 radians in a circular region whose radius is 2m is

a) $\frac{\pi}{2}m^2$

b) $\frac{\pi}{3}m^2$

c) $\frac{\pi}{6}m^2$

d) $2m^2$
e) $1m^2$

97.   An arc AB of length 5cm is marked on a circle of radius 3cm. the area of the sector bounded by this arc and the radii from A and B is

a) $7.5\ cm^2$
b) $7.5\ m^2$
c) $75\ m^2$
d) $75\ cm^2$
e)   None of these

98. $\cos^2\frac{\theta}{2} + \sin^2\frac{\theta}{2} = $ _____

a) $\frac{1}{4}$

b) $\frac{1}{2}$

c) 2
d) 0
e) 1

99. In which quadrant does the terminal side lie if $\sin\theta > 0$ and $\tan\theta$ _____ ?

a) 1st
b) 2nd
c) 3rd
d) 4th
e) None of these

100. $\sec^2\theta$ = …………..

a) $1 - \cos^2\theta$
b) $1 - \tan^2\theta$
c) $1 + \tan^2\theta$
d) $1 - \cot^2\theta$
e) $1 + \cot^2\theta$

101. $Sin\dfrac{-3\pi}{2}$ = _____ ?

a) 1
b) 0
c) -1
d) 11
e) None of these

102. $Cos\dfrac{-3\pi}{2}$ = _____ ?

a) 1
b) 0
c) -1
d) 10
e) None of these

103. $Cos 9\pi$ = _____ ?

a) 1
b) 0
c) -1
d) 10
e) None of these

104. $Cosec^2\theta - Cot^2\theta$ = _____ ?

a) 1
b) 0
c) -1
d) $Tan^2\theta$
e) $Sec^2\theta$

105. $Cos^2 2\theta$ = _____ ?

a) $1 - \sin^2\theta$
b) $1 + \sin^2\theta$
c) $1 - \sin^2 2\theta$
d) $1 - \sin\theta$
e) $1 + \sin\theta$

106. $1 + \cot^2 2\theta$ = _____ ?

a) $\sec^2\theta$
b) $cosec^2\theta$
c) $cosec^2 2\theta$
d) $\sec^2\theta$
e) none of these

****

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