# Class 11 Mathematics · Chapter 3: Trigonometric Functions

**Worksheet** · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

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**1.** Which of the following is equal to sin 20°? [1]

(a) sin 380° (b) sin (−20°)
(c) sin 200° (d) cos 20°

**2.** Which of the following can never be a value of cos x for a real number x? [1]

(a) −1 (b) 3/4
(c) 1/√2 (d) π/3

**3.** If $\tan x = \frac{1}{2}$, then sin 2x is [1]

(a) $\frac{3}{5}$ (b) $\frac{4}{3}$
(c) 1 (d) $\frac{4}{5}$

**4.** If sin x > 0 and tan x < 0, then x lies in the [1]

(a) first quadrant (b) second quadrant
(c) third quadrant (d) fourth quadrant

**5.** The radian measure of 135° is [1]

(a) 2π/3 (b) 3π/4
(c) 5π/6 (d) 3π/5

**6.** Without finding their values, arrange sin 1, sin 2 and sin 3 (the angles in radians) in increasing order. Give a reason. [2]

**7.** Write the domain of y = tan x and of y = cot x. Is there a real number at which both tan x and cot x are undefined? Justify. [2]

**8.** In a circle, an arc of length 11 cm subtends an angle of 30° at the centre. Find the length of an arc of the same circle that subtends an angle of 1.5 radian at the centre. (Use π = 22/7.) [2]

**9.** Find the range of y = 3 − 2 sin x. Find the values of x in [0, 2π] at which y takes its greatest and its least value. [3]



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**10.** If $\tan x = \frac{1}{2}$ and $\tan y = \frac{1}{3}$, where x and y are acute angles, show that $x + y = \pi/4$. [3]

**11.** Without finding the value of tan 15° or of tan 75°, show that tan 15° + tan 75° = 4. [3]



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