

## BYJU'S Study Planner for Board Term I (CBSE Grade 12)

Date: 10/11/2021

Subject: Mathematics

Topic : Inverse Trigonometric  
Functions

Class: Standard XII

1. The principal value of  $\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$  is

- A.  $\frac{\pi}{3}$
- B.  $-\frac{\pi}{3}$
- C.  $\frac{\pi}{6}$
- D.  $-\frac{\pi}{6}$

2. The domain of the function  $f(x) = \sin^{-1}(5x)$  is

- A.  $\left[-\frac{\pi}{5}, \frac{\pi}{5}\right]$
- B.  $\left[-\frac{\pi}{10}, \frac{\pi}{10}\right]$
- C.  $\mathbb{R}$
- D.  $\left[-\frac{1}{5}, \frac{1}{5}\right]$

3. The value of  $\cos^{-1}\left(\cos \frac{5\pi}{3}\right) + \sin^{-1}\left(\cos \frac{5\pi}{3}\right)$  is

- A.  $\frac{\pi}{2}$
- B.  $\frac{5\pi}{3}$
- C.  $\frac{10\pi}{3}$
- D. 0

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4. The value of  $\sin^{-1}\left(\sin \frac{4\pi}{3}\right) + \cos^{-1}\left(\cos \frac{4\pi}{3}\right)$  is
- A.**  $\frac{8\pi}{3}$
- B.**  $\frac{4\pi}{3}$
- C.**  $\frac{2\pi}{3}$
- D.**  $\frac{\pi}{3}$
5. If  $\sin^{-1} x + \sin^{-1} y = \frac{\pi}{2}$ , then  $\cos^{-1} x + \cos^{-1} y$  is equal to
- A.**  $\frac{\pi}{2}$
- B.**  $\frac{\pi}{4}$
- C.**  $\pi$
- D.**  $\frac{3\pi}{4}$
6.  $\cos\left[\cos^{-1}\left(\frac{-1}{7}\right) + \sin^{-1}\left(\frac{-1}{7}\right)\right] =$
- A.**  $\frac{-1}{3}$
- B.** 0
- C.**  $\frac{1}{3}$
- D.**  $\frac{4}{9}$

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7. The value of  $\tan^{-1}\left(\tan\left(-\frac{3\pi}{4}\right)\right) + \cot^{-1}\left(\cot\left(-\frac{3\pi}{4}\right)\right)$  is
- $\frac{\pi}{2}$
  - $\pi$
  - $-\frac{3\pi}{2}$
  - $\frac{3\pi}{2}$
8. The value of  $\tan^{-1} \cot \frac{12\pi}{7}$  is
- $\frac{12\pi}{7}$
  - $\frac{5\pi}{7}$
  - $\frac{3\pi}{7}$
  - $-\frac{3\pi}{14}$
9. In the interval  $x \in [0, 1]$  the value of  $\cos^{-1} \sqrt{1-x} + \sin^{-1} \sqrt{1-x}$  is
- $\pi$
  - $\frac{\pi}{2}$
  - 1
  - 0
10. A solution of the equation  $\tan^{-1}(1+x) + \tan^{-1}(1-x) = \frac{\pi}{2}$  is
- $x = 1$
  - $x = -1$
  - $x = 0$
  - $x = \pi$

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11. The value of  $\cos^{-1}\left[-\sin\left(\frac{7\pi}{6}\right)\right]$  is
- A.  $\frac{5\pi}{3}$
  - B.  $\frac{7\pi}{6}$
  - C.  $\frac{\pi}{3}$
  - D.  $-\frac{7\pi}{6}$
12. The value of  $\sin^{-1}\sin\frac{36\pi}{7} + \cos^{-1}\sin\frac{39\pi}{7}$  is
- A.  $\frac{4\pi}{7}$
  - B.  $\frac{\pi}{7}$
  - C.  $\frac{11\pi}{14}$
  - D.  $\frac{3\pi}{14}$
13. The value of  $\cos\left[2\cos^{-1}\frac{1}{5} + \sin^{-1}\frac{1}{5}\right]$  is
- A.  $\frac{2\sqrt{6}}{5}$
  - B.  $-\frac{2\sqrt{6}}{5}$
  - C.  $\frac{1}{5}$
  - D.  $-\frac{1}{5}$

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14. If  $(\tan^{-1} x)^2 + (\cot^{-1} x)^2 = \frac{5\pi^2}{8}$ , then  $x$  equals
- 1
  - 1
  - 0
  - None of these
15. If  $\alpha$  and  $\beta$  ( $\alpha > \beta$ ) are the roots of the equation  $x^2 - \sqrt{2}x + \sqrt{3 - 2\sqrt{2}} = 0$ , then the value of  $(\cos^{-1} \alpha + \tan^{-1} \alpha + \tan^{-1} \beta)$  is equal to
- $\frac{3\pi}{8}$
  - $\frac{5\pi}{8}$
  - $\frac{7\pi}{8}$
  - $\frac{\pi}{3}$
16. The value of  $\sin^{-1} \left( \frac{3}{5} \right) + \tan^{-1} \left( \frac{1}{7} \right)$  is
- $\frac{\pi}{4}$
  - $\frac{\pi}{2}$
  - $\cos^{-1} \left( \frac{4}{5} \right)$
  - $\frac{3\pi}{4}$

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17. The value of  $\sum_{x=0}^4 \sin^{-1}(\sin x)$  is equal to
- A.  $3\pi - 8$
  - B.  $3\pi - 7$
  - C.  $3\pi - 9$
  - D.  $3\pi - 6$
18. If  $f(x) = x^{11} + x^9 - x^7 + x^3 + 1$  and  $f(\sin^{-1}(\sin 8)) = \alpha$ , where  $\alpha$  is constant, then  $f(\tan^{-1}(\tan 8))$  is equal to
- A.  $\alpha$
  - B.  $\alpha - 2$
  - C.  $\alpha + 2$
  - D.  $2 - \alpha$
19. Consider  
 $f(x) = \sin^{-1}(\sec(\tan^{-1} x)) + \cos^{-1}(\operatorname{cosec}(\cot^{-1} x))$   
 Statement-1 : Domain of  $f(x)$  is a singleton set.
- Reason
- Statement-2 : Range of the function  $f(x)$  is a singleton set.
- A. Statement-1 is true, Statement-2 is true and Statement-2 is correct explanation for Statement-1.
  - B. Statement-1 is true, Statement-2 is true and Statement-2 is NOT the correct explanation for Statement-1.
  - C. Statement-1 is true, Statement-2 is false.
  - D. Statement-1 is false, Statement-2 is true.

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20. Assertion ( $A$ ) :  $\cos^{-1} x$  and  $\tan^{-1} x$  are positive for all positive real values of  $x$  in their domain.

Reason ( $R$ ) : The domain of  $f(x) = \cos^{-1} x + \tan^{-1} x$  is  $[-1, 1]$ .

- A. Both  $A$  and  $R$  are true and  $R$  is the correct explanation of  $A$ .
- B. Both  $A$  and  $R$  are true but  $R$  is not correct explanation of  $A$ .
- C.  $A$  is true but  $R$  is false.
- D.  $A$  is false but  $R$  is true.