

# Classroom Voting Questions: Precalculus

## Inverse Trigonometric Functions

1. What is  $\arcsin\left(\frac{1}{2}\right)$ ?

(a) 0

(b)  $\frac{\pi}{6}$

(c)  $\frac{\pi}{4}$

(d)  $\frac{\pi}{3}$

2. What is  $\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$ ?

(a)  $\frac{\pi}{3}$

(b)  $\frac{5\pi}{3}$

(c)  $-\frac{\pi}{3}$

(d)  $\frac{4\pi}{3}$

3. What is  $\arcsin(-1)$ ?

(a)  $\frac{3\pi}{2}$

(b)  $\frac{\pi}{2}$

(c)  $-\frac{\pi}{2}$

(d)  $-\frac{3\pi}{2}$

4. What is  $\arccos\left(\frac{1}{2}\right)$ ?

- (a)  $\frac{\pi}{6}$
- (b)  $\frac{\pi}{4}$
- (c)  $\frac{\pi}{3}$
- (d)  $\frac{\pi}{2}$

5. What is  $\cos^{-1}(-1)$ ?

- (a) 0
- (b)  $\pi$
- (c)  $-\pi$
- (d)  $2\pi$

6. What is  $\arccos\left(-\frac{\sqrt{2}}{2}\right)$ ?

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

7. What is  $\tan^{-1}(1)$ ?

- (a)  $\frac{\pi}{2}$
- (b)  $\frac{\pi}{3}$
- (c)  $\frac{\pi}{4}$
- (d)  $\frac{\pi}{6}$

8. What is  $\arctan(-\sqrt{3})$ ?

- (a)  $\frac{2\pi}{3}$

- (b)  $\frac{5\pi}{3}$
- (c)  $-\frac{\pi}{3}$
- (d)  $-\frac{2\pi}{3}$

9. What is  $\arctan(0)$ ?

- (a) 0
- (b)  $\frac{\pi}{2}$
- (c)  $\pi$
- (d)  $\frac{3\pi}{2}$

10. True or False:  $\sin^{-1}\left(\sin\left(\frac{5}{4}\right)\right) = \frac{5}{4}$

- (a) True, and I am very confident.
- (b) True, but I am not very confident.
- (c) False, but I am not very confident.
- (d) False, and I am very confident.

11. True or False:  $\sin\left(\sin^{-1}\left(\frac{5}{4}\right)\right) = \frac{5}{4}$

- (a) True, and I am very confident.
- (b) True, but I am not very confident.
- (c) False, but I am not very confident.
- (d) False, and I am very confident.

12. True or False:  $\sin^{-1}\left(\sin\frac{\pi}{3}\right) = \frac{\pi}{3}$ .

- (a) True, and I am very confident.
- (b) True, but I am not very confident.
- (c) False, but I am not very confident.
- (d) False, and I am very confident.

13. True or False:  $\sin^{-1}\left(\sin\frac{3\pi}{4}\right) = \frac{3\pi}{4}$ .
- (a) True, and I am very confident.
  - (b) True, but I am not very confident.
  - (c) False, but I am not very confident.
  - (d) False, and I am very confident.
14. Calculate the exact value of  $\sin\left(\arctan\left(\frac{4}{3}\right)\right)$ . Work this out by hand, without using a calculator.
- (a)  $\frac{4}{3}$
  - (b)  $\frac{3}{4}$
  - (c)  $\frac{4}{5}$
  - (d)  $\frac{3}{5}$
15. Calculate the exact value of  $\sin\left(2\arctan\left(\frac{4}{3}\right)\right)$ . Work this out by hand, without using a calculator.
- (a)  $\frac{24}{25}$
  - (b)  $\frac{8}{5}$
  - (c)  $\frac{8}{3}$
  - (d)  $\frac{12}{25}$
16. A triangle has sides of length  $a$ ,  $b$ , and  $c$  and angles measuring  $\alpha$ ,  $\beta$ , and  $\gamma$  opposite those sides, respectively. If  $a = 3$ ,  $b = 4$ , and  $\gamma = 90^\circ$ , find  $\alpha$ .
- (a)  $\alpha = \tan^{-1}\frac{3}{4}$
  - (b)  $\alpha = \tan^{-1}\frac{4}{3}$
  - (c)  $\alpha = \cos^{-1}\frac{3}{4}$
  - (d)  $\alpha = \cos^{-1}\frac{4}{3}$