

MUST SHOW REASONING

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the value of the expression.

1) $\sin^{-1} \frac{\sqrt{2}}{2}$ 1) _____

- A) $\frac{\pi}{3}$ B) $\frac{2\pi}{3}$ C) $\frac{\pi}{4}$ D) $\frac{3\pi}{4}$

2) $\cos^{-1} \frac{\sqrt{2}}{2}$ 2) _____

- A) $\frac{11\pi}{6}$ B) $\frac{7\pi}{4}$ C) $\frac{\pi}{6}$ D) $\frac{\pi}{4}$

3) $\cos^{-1} \left(-\frac{\sqrt{2}}{2} \right)$ 3) _____

- A) $\frac{\pi}{4}$ B) $-\frac{\pi}{4}$ C) $\frac{3\pi}{4}$ D) $-\frac{3\pi}{4}$

4) $\tan^{-1} -1$ 4) _____

- A) $\frac{5\pi}{4}$ B) $-\frac{\pi}{4}$ C) $\frac{7\pi}{4}$ D) $\frac{\pi}{4}$

5) $\sin^{-1} -0.5$ 5) _____

- A) $\frac{\pi}{6}$ B) $\frac{\pi}{3}$ C) $\frac{7\pi}{3}$ D) $-\frac{\pi}{6}$

6) $\tan^{-1} \left(\frac{\sqrt{3}}{3} \right)$ 6) _____

- A) $\frac{\pi}{3}$ B) $\frac{4\pi}{3}$ C) $\frac{\pi}{6}$ D) $\frac{\pi}{4}$

Find the exact value of the expression.

7) $\cos (\cos^{-1}(-0.9372))$ 7) _____

- A) 0.4686 B) -0.9372 C) 0.9372 D) -0.4686

8) $\sin [\sin^{-1} (-0.6)]$ 8) _____

- A) -1.6667 B) -0.4 C) -1.771 D) -0.6

9) $\tan [\tan^{-1} (0.2)]$ 9) _____

- A) 0.8 B) 4.9332 C) 5 D) 0.2

Find the exact value of each expression.

10) $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$ 10) _____
A) $\frac{5\pi}{6}$ B) $-\frac{\pi}{6}$ C) $-\frac{5\pi}{6}$ D) $\frac{\pi}{6}$

11) $\cos^{-1}\left[\cos\left(-\frac{3\pi}{5}\right)\right]$ 11) _____
A) $-\frac{2\pi}{5}$ B) $\frac{2\pi}{5}$ C) $\frac{3\pi}{5}$ D) $-\frac{3\pi}{5}$

Use a calculator to find the value of the expression in radian measure rounded to 2 decimal places.

12) $\sin^{-1}(0.4)$ 12) _____
A) 66.42 B) 0.41 C) 1.16 D) 23.58

13) $\cos^{-1}\left(\frac{1}{6}\right)$ 13) _____
A) 80.41 B) 1.40 C) 0.17 D) 9.59

14) $\tan^{-1}(1.5)$ 14) _____
A) 0.98 B) 0.59 C) 33.69 D) 56.31

15) $\sin^{-1}\left(\frac{\sqrt{5}}{3}\right)$ 15) _____
A) 48.19 B) 0.73 C) 41.81 D) 0.84

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

16) The formula 16) _____

$$D = 24 \left[1 - \frac{\cos^{-1}(\tan i \tan \theta)}{\pi} \right]$$

can be used to approximate the number of hours of daylight when the declination of the sun is i° at a location θ° north latitude for any date between the vernal equinox and autumnal equinox. To use this formula, $\cos^{-1}(\tan i \tan \theta)$ must be expressed in radians. Approximate the number of hours of daylight in Fargo, North Dakota, ($46^\circ 52'$ north latitude) for vernal equinox ($i = 0^\circ$).