MA 154 Exam 1 Fall 2002

This exam covers Sections 6.1, 6.2, 6.3, 6.4 and 6.5

1) Which of the following angles is coterminal with $\theta = \frac{4\pi}{3}$?

A. $120°$ B. $-120°$ C. $-60°$ D. $60°$ E. $-240°$

2. Find the exact radian measure of $\theta = 75°$.

A. $\frac{3\pi}{4}$ B. $\frac{6\pi}{5}$ C. $\frac{12\pi}{5}$ D. $\frac{5\pi}{6}$ E. $\frac{5\pi}{12}$

3. Find the area of the sector determined by the central angle $\theta = 2.5$ and subtended by an arc of length 13.25 cm.

A. $35.11\ cm^2$ B. $13.26\ cm^2$ C. $70.23\ cm^2$ D. $6.63\ cm^2$ E. None of these.

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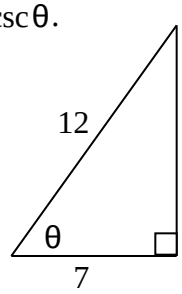
4. Find the exact value of $\csc\theta$.



A. $\frac{\sqrt{95}}{7}$ B. $\frac{12}{\sqrt{193}}$ C. $\frac{\sqrt{95}}{12}$ D. $\frac{\sqrt{193}}{12}$ E. None of these

5. A forester stands 300 feet along level ground from the base of a tree that is known to be 225 ft tall. From the forester's location, estimate the angle between ground and the top of the tree, to the nearest degree.

A. 37° B. 53° C. 49° D. 41° E. None of these

6. A 10-foot ladder makes a 70° angle with the ground while leaning against a building. How far is the bottom of the ladder from the base of the building?

A. 3.6 feet B. 3.4 feet C. 10.6 feet D. 9.4 feet E. None of these

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7. Approximate $\sec 18°$ to four decimal places.

A. 1.0515 B. 3.2361 C. 0.0010 D. 3.0777 E. None of these

8. Assume $\sin\theta \neq 0$. Which of the following is equivalent to $\dfrac{\cos\theta + 1}{\sin^2\theta}$?

A. $1 - \sec\theta$ B. $1 - \csc\theta$ C. $-\sec\theta$ D. $\dfrac{1}{1-\cos\theta}$ E. $-\csc\theta$

9. Find the exact value of $\cos\theta$, if $\sin\theta = \dfrac{2}{3}$ and $\tan\theta < 0$.

A. $\dfrac{2}{\sqrt{5}}$ B. $\dfrac{\sqrt{5}}{3}$ C. $-\dfrac{\sqrt{5}}{3}$ D. $-\dfrac{\sqrt{5}}{2}$ E. None of these

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10. Assume that $\cos x \neq 0$. Which of the following is equivalent to $\dfrac{\tan(-x)}{\sec(-x)}$?

A. $\sin x$ B. $-\sin x$ C. $\dfrac{\sin^2 x}{\cos x}$ D. $-\dfrac{\sin^2 x}{\cos x}$ E. $\dfrac{\sin x}{\cos^2 x}$

11. What is the reference angle, θ_R, of $\theta = 215°$?

A. –55° B. 55° C. 45° D. 35° E. None of these

12. Approximate, to the nearest 0.01 radian, all angles θ in the interval $[0, 2\pi)$ that satisfy the equation $\sin\theta = -0.6451$.

A. 0.70, 2.44 B. 2.44, 3.84 C. 0.70, 5.58 D. 3.84, 5.58 E. None of these

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13. Find the exact value of $\cot\left(\frac{4\pi}{3}\right)$.

A. $-\frac{\sqrt{3}}{2}$ B. $-\frac{1}{\sqrt{3}}$ C. $\frac{1}{\sqrt{3}}$ D. $-\sqrt{3}$ E. None of these.

14. Find the period and phase shift of the equation $y = 5\sin\left(2x + \frac{\pi}{4}\right)$.

A. Period = 2π, Phase Shift = $-\frac{\pi}{2}$

B. Period = π, Phase Shift = $-\frac{\pi}{2}$

C. Period = $\frac{1}{2}\pi$, Phase Shift = $-\frac{\pi}{4}$

D. Period = 2π, Phase Shift = $-\frac{\pi}{4}$

E. Period = π, Phase Shift = $-\frac{\pi}{8}$

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MA 154, Fall 2002
Exam 1 Answers

Question	Letter	Answer
1.	B	$-120°$
2.	E	$\frac{5\pi}{12}$
3.	A	35.11 cm^2
4.	E	$\frac{12}{\sqrt{95}}$ (none of these)
5.	A	37°
6.	B	3.4 feet
7.	A	1.0515
8.	D	$\frac{1}{1-\cos\theta}$
9.	C	$-\frac{\sqrt{5}}{3}$
10.	B	$-\sin x$
11.	D	35°
12.	D	3.84, 5.58
13.	C	$\frac{1}{\sqrt{3}}$
14.	E	Period = π, Phase Shift = $-\frac{\pi}{8}$