MA 15400 Exam 1 Spring 2010

Covers Sections 6.1, 6.2, 6.3, 6.4, and all of 6.5

1. Find the angle that is **complementary** to 12°15'7"

A. 77°44'53"

B. 77°44'50"

C. 167°44'53"

D. 167°44'50"

E. None of the above.

2. Express $\theta = 1.9$ in terms of degrees, minutes, and seconds, to the nearest second.

A. 190°52'43"

B. 108°51'43"

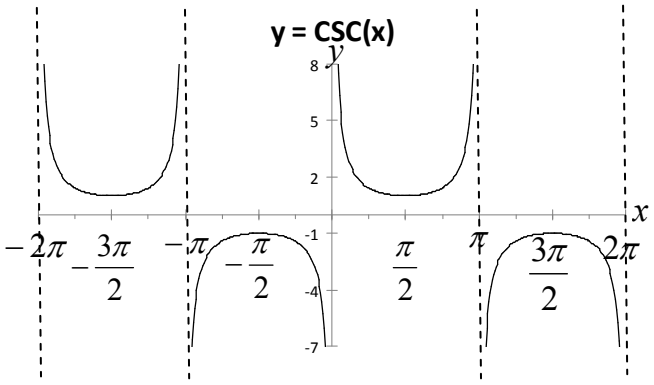
C. 190°51'43"

D. 108°52'43"

E. None of the above.

3. Given the graph of $y = \csc(x)$, complete the following statement.

$As\ x \to 0^+, \csc(x) \to$ _____



A. $-\infty$

B. 0

C. 1

D. ∞

E. Undefined

Covers Sections 6.1, 6.2, 6.3, 6.4, and all of 6.5

4. Find the area, to the nearest $0.1\,\text{cm}^2$, of the sector of the circle created by a central angle of $27°$ subtending an arc length of $12.5\,\text{cm}$.

A. $331.6\,\text{cm}^2$

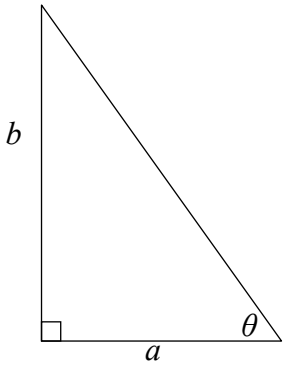
B. $82.9\,\text{cm}^2$

C. $165.8\,\text{cm}^2$

D. $337.5\,\text{cm}^2$

E. None of the above.

5. Express $\sin(\theta)$ in terms of a and b.



A. $\sin(\theta) = \dfrac{b}{a+b}$

B. $\sin(\theta) = \dfrac{a}{\sqrt{a^2+b^2}}$

C. $\sin(\theta) = \dfrac{a}{a+b}$

D. $\sin(\theta) = \dfrac{b}{\sqrt{a^2+b^2}}$

E. None of the above.

6. Bill is 200 feet from the base of a flagpole. From this point, the angle between the ground and the top of the flagpole is $38°$. Approximate the height of the flagpole to the nearest whole foot.

A. 156 feet

B. 123 feet

C. 158 feet

D. 121 feet

E. None of the above.

Covers Sections 6.1, 6.2, 6.3, 6.4, and all of 6.5

7. Which of the following is equivalent to $\dfrac{\sin(\theta)}{\csc(\theta)}+\dfrac{\cos(\theta)}{\sec(\theta)}$?

A. $\sin\theta+\cos\theta$

B. 1

C. $\sin\theta\cos\theta$

D. $\tan\theta+\cot\theta$

E. None of the above.

8. Let $P(t)=\left(\dfrac{-8}{17},\dfrac{-15}{17}\right)$ be a point of intersection between the terminal side of angle t and the unit circle. Find $P(-t+\pi)$.

A. $\left(\dfrac{8}{17},\dfrac{15}{17}\right)$

B. $\left(\dfrac{-8}{17},\dfrac{15}{17}\right)$

C. $\left(\dfrac{-8}{17},\dfrac{-15}{17}\right)$

D. $\left(\dfrac{8}{17},\dfrac{-15}{17}\right)$

E. None of the above.

Covers Sections 6.1, 6.2, 6.3, 6.4, and all of 6.5

9. Which of the following is equivalent to $\cos(-x)\csc(-x)$?

A. $-\cot(x)$

B. 1

C. $\cot(x)$

D. -1

E. None of the above.

10. Find the reference angle for $\theta = 85.7$. Please round to two decimal places.

A. 0.69

B. 2.26

C. 0.64

D. 0.88

E. None of the above.

11. Approximate to the nearest $0.01°$, all angles in the interval $[0°, 360°)$, that satisfies the equation $\cot\theta = 4.7506$.

A. $11.89°, 191.89°$

B. $168.11°, 348.11°$

C. $101.89°, 281.89°$

D. $78.11°, 258.11°$

E. None of the above.

Covers Sections 6.1, 6.2, 6.3, 6.4, and all of 6.5

12. Approximate to the nearest 0.01 **radians**, all angles in the interval $[0, 2\pi)$, that satisfies the equation $\cos\theta = -0.8311$.

A. $0.59, 5.69$

B. $0.59, 2.55$

C. $3.73, 5.69$

D. $2.55, 3.73$

E. None of the above.

13. Approximate $\sec\left(\frac{21}{5}\right)$ to four decimal places.

A. 1.0290

B. -2.0397

C. -1.1473

D. 0.9718

E. None of the above.

Covers Sections 6.1, 6.2, 6.3, 6.4, and all of 6.5

14. Find the Period and Phase Shift of the graph of the equation $y = 4\sin\left(3x - \frac{4\pi}{7}\right)$.

A. Period = $\frac{2\pi}{3}$, Phase Shift = $\frac{\pi}{7}$

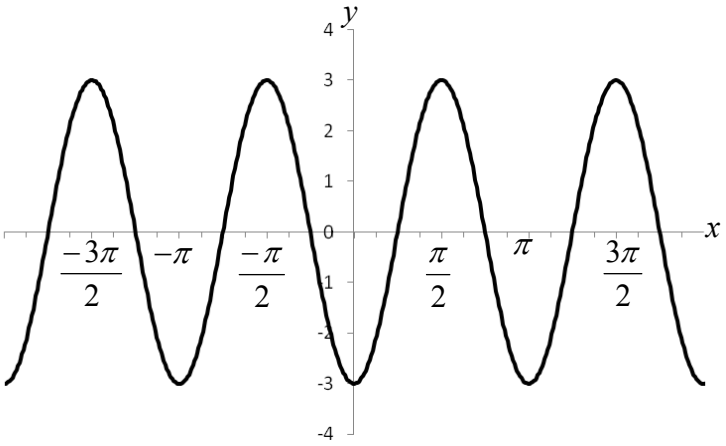
B. Period = $\frac{\pi}{2}$, Phase Shift = $\frac{-\pi}{7}$

C. Period = $\frac{2\pi}{3}$, Phase Shift = $\frac{4\pi}{21}$

D. Period = $\frac{\pi}{2}$, Phase Shift = $\frac{-4\pi}{21}$

E. None of the above

15. Which of the following equations best represents the graph of the function, which is in the form $y = a\sin(bx + c)$, with $a > 0, b > 0,$ and least positive value for c?



A. $y = 3\sin\left(2x + \frac{3\pi}{4}\right)$

B. $y = 3\sin\left(4x + \frac{3\pi}{2}\right)$

C. $y = 3\sin\left(6x + \frac{3\pi}{4}\right)$

D. $y = 3\sin\left(2x + \frac{3\pi}{2}\right)$

E. $y = 3\sin\left(4x + \frac{3\pi}{8}\right)$

Covers Sections 6.1, 6.2, 6.3, 6.4, and all of 6.5

Exam 1 Answers

	Answer	Letter
1.	77°44'53"	A
2.	108°51'43"	B
3.	∞	D
4.	$165.8\,\text{cm}^2$	C
5.	$\sin(\theta) = \frac{b}{\sqrt{a^2+b^2}}$	D
6.	156 feet	A
7.	1	B
8.	$\left(\frac{8}{17}, \frac{-15}{17}\right)$	D
9.	$-\cot(x)$	A
10.	0.88	D
11.	11.89°,191.89°	A
12.	2.55,3.73	D
13.	–2.0397	B
14.	Period = $\frac{2\pi}{3}$, Phase Shift = $\frac{4\pi}{21}$	C
15.	$y = 3\sin\left(2x + \frac{3\pi}{2}\right)$	D