MA 154 Exam 1 Fall 2006

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

1. Which of the following is **not** coterminal with 330º?

A. $-390°$

B. $\frac{23\pi}{6}$

C. $1050°$

D. $-\frac{13\pi}{6}$

E. $-60°$

2. A pendulum in a grandfather clock is 3 feet long and swings back and forth along 7 inch arc. Approximate the angle through which the pendulum passes during one swing to the nearest tenth of a degree. (1 foot = 12 inches)

A. 8.1^o

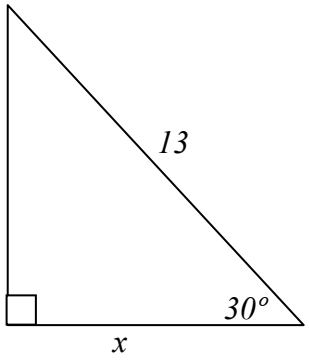
B. 9.4^o

C. 10.2^o

D. 11.1^o

E. None of the above

3. Find the exact value of x.



A. $\frac{13}{\sqrt{2}}$

B. $13\sqrt{3}$

C. $\frac{13}{2}$

D. $13\sqrt{2}$

E. None of the above

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4. In the town of Duncan, British Columbia, there is a giant hockey stick sitting on top of the Community Centre. It weights 31 tons, is constructed of laminated wood and was designed by Ed Berwick of Vancouver. The bottom of the hockey stick sits on the roof of the Community Centre and the handle of the stick starts at the roof and goes up in the air making a 55º angle with the flat roof. If top of the handle is 51.2 meters above the roof, what is the length of the handle? Round to the nearest tenth of a meter.

A. 41.9 meters

B. 62.5 meters

C. 73.1 meters

D. 35.9 meters

E. 53.3 meters

5. Approximate $\csc(41°27')$ to the nearest ten-thousandths.

A. 1.5232

B. 0.0004

C. 1.3250

D. 1.0000

E. None of the above

6. $(1 + \sin x)(\sec x - \tan x)$ is equivalent to which of the following?

A. $\sec x - 1$

B. $\tan x$

C. $\csc x - 1$

D. $\sin x$

E. $\cos x$

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7. Find the exact value of $\cot\theta$ if θ is in standard position, $\cos\theta = \frac{-5}{\sqrt{61}}$ and $\sin\theta < 0$.

A. $\frac{6}{5}$

B. $\frac{-6}{5}$

C. $\frac{-5}{6}$

D. $\frac{5}{6}$

E. None of the above

8. Which quadrant contains θ if $\cos\theta > 0$ *and* $\tan\theta < 0$?

A. Quadrant I

B. Quadrant III

C. Quadrant IV

D. Quadrant II

E. No possible angle θ exist

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9. Let $P(t)=\left(\frac{-8}{17},\frac{-15}{17}\right)$ be the point of intersection of the terminal side of θ and the unit circle. Find the coordinates of $P(-t+\pi)$.

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

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

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

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

E. None of the above

10. $\sin(-x)\sec(-x)$ is equivalent to which of the following?

A. $-\cot(x)$

B. $\tan(x)$

C. $\cot(x)$

D. $-\tan(x)$

E. 1

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11. As $x \to \left(\frac{\pi}{2}\right)^{-}$, $\tan(x) \to$ _____

A. 0

B. $-\infty$

C. undefined

D. ∞

E. None of the above

12. Find the reference angle for 41 rounded to the nearest ten-thousandth of a radian.

A. 1.3009

B. 0.1593

C. 0.2442

D. 0.5681

E. None of the above

13. Approximate, to the nearest 0.01 radian, all the angles θ in the interval [0, 2π) that satisfy the equation $\tan\theta = -3.2176$

A. 1.27, 1.87

B. 4.41, 5.01

C. 1.87, 5.01

D. 1.27, 4.41

E. None of the above

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14. Find the period and phase shift of the equation $y = 4\sin\left(\frac{\pi}{3}x - \frac{2\pi}{5}\right)$.

A. Period: 6, Phase Shift: $\frac{2\pi}{15}$

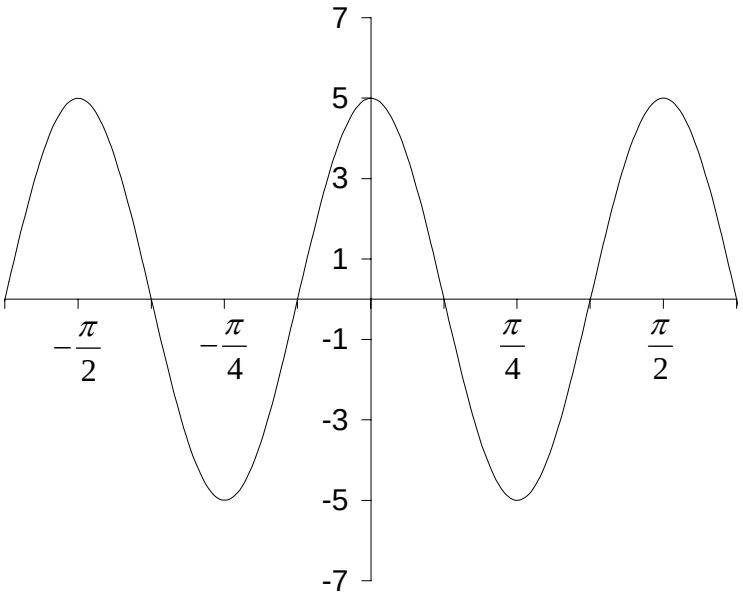
B. Period: $\frac{2\pi}{3}$, Phase Shift: $\frac{6}{5}$

C. Period: 6, Phase Shift: $\frac{6}{5}$

D. Period: $\frac{2\pi}{3}$, Phase Shift: $\frac{2\pi}{15}$

E. None of the above

15. Write the equation of the graph in the form $y = a\sin(bx + c)$ for $a > 0,\ b > 0$ and least positive real number *c*.



A. $y = 5\sin\left(4x + \frac{\pi}{2}\right)$

B. $y = 5\sin\left(\frac{1}{4}x + \frac{\pi}{2}\right)$

C. $y = 5\sin\left(\frac{1}{4}x + \frac{\pi}{32}\right)$

D. $y = 5\sin\left(4x + \frac{\pi}{32}\right)$

E. None of the above

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Question	Answer	Letter
1.	$-60°$	E
2.	11.1º	D
3.	$\frac{13\sqrt{3}}{2}$	E
4.	62.5 meters	B
5.	1.5107	E
6.	$\cos x$	E
7.	$\frac{5}{6}$	D
8.	Quadrant IV	C
9.	$\left(\frac{8}{17}, \frac{-15}{17}\right)$	A
10.	$-\tan(x)$	D
11.	∞	D
12.	0.1593	B
13.	1.87, 5.01	C
14.	Period: 6, Phase Shift: $\frac{6}{5}$	C
15.	$y = 5\sin\left(4x + \frac{\pi}{2}\right)$	A