MA 154 Exam 1 Spring 2008

This exam covers all of sections 6.1, 6.2, 6.3, 6.4 and 6.5

1. Find the complementary angle to $71°5'12"$

   A. $108°54'48"$

   B. $18°8'40"$

   C. $108°8'40"$

   D. $18°54'48"$

   E. None of the above

2. Which of the following angles **is not** coterminal with $150°$?

   A. $\frac{17\pi}{6}$

   B. $-210°$

   C. $\frac{-19\pi}{6}$

   D. $510°$

   E. $\frac{-5\pi}{6}$

3. Approximate, to one decimal place, the area of the sector of a circle created when the central angle, θ, on a circle of radius 19 cm, subtends an arc length of 27.8 cm.

   A. $528.2\,cm^2$

   B. $139.9\,cm^2$

   C. $264.1\,cm^2$

   D. $396.2\,cm^2$

   E. None of the above

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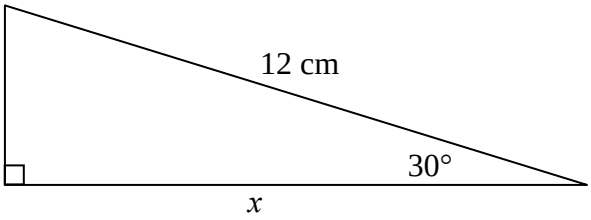
4. Find the exact value of x.



A. $6\sqrt{3}$

B. $3\sqrt{2}$

C. $2\sqrt{3}$

D. $6\sqrt{2}$

E. None of the above

5. Find the exact value of $\csc\theta$ if θ is in standard position and the terminal side of θ is in QII and parallel to the line $5x+8y=-15$.

A. $\frac{\sqrt{89}}{8}$

B. $\frac{-5}{8}$

C. $\frac{8}{5}$

D. $\frac{-\sqrt{89}}{5}$

E. None of the above

6. Which of the following is equivalent to $\sec\theta-\cos\theta$?

A. $\cot\theta\cos\theta$

B. $\tan\theta\sin\theta$

C. $\sec\theta\sin\theta$

D. $\csc\theta\cos\theta$

E. $\cos\theta\sin\theta$

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7. Let $P(t)$ be the point on the unit circle U that corresponds to t. If $P(t)$ has the rectangular coordinate $\left(\frac{15}{17},\frac{8}{17}\right)$, find $P(-t+\pi)$.

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

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

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

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

E. None of the above

8. Which of the following statements is/are true about the graph of the equation $y=\cos(x)-3$?

I. The point $\left(\frac{\pi}{2},-3\right)$ is on the graph.

II. The graph crosses the y-axis at -3.

III. The range of the function is $[-3,-1]$.

A. Only Statement III is true.

B. Only Statement I is true.

C. Only Statements I and III are true.

D. Only Statements II and III are true.

E. Only Statements I and II are true.

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9. Complete the statement: As $x \to \frac{3\pi}{2}^{+}$, $\tan x \to$ _____

A. ∞

B. 0

C. $-\infty$

D. undefined

E. None of the above

10. A statue of Big Ned Kelly, show to the right, is located in Glenrowan Australia. Rod Gerret commissioned Kevin Thomas to build 1.5 ton fiberglass outlaw at a cost of $12,000. It took eleven hours to truck down from Sydney and was unveiled on April 14, 1992. From a distance of 45 feet, measured from a point on the level ground directly below the top of Bid Ned Kelly's head, the angle between the ground and the line of sight to the top of his head is $23.6°$. Rounded to the nearest tenth of a foot, how tall is this statue of Big Ned Kelly? Do not try to guess the answer by looking at the picture. Use some trigonometry.

A. 26.3 feet

B. 18.0 feet

C. 41.2 feet

D. 19.7 feet

E. None of the above

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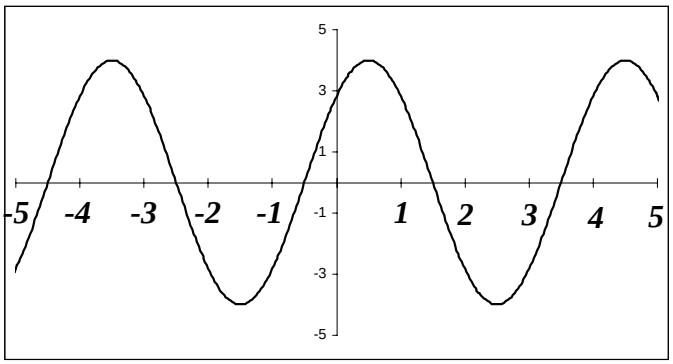
11. Find the period of the following sine curve.



A. 4

B. 1

C. 5

D. 2

E. 3

12. Find the reference angle, θ_R, if $\theta = 3005°$.

A. $\theta_R = 125°$

B. $\theta_R = 35°$

C. $\theta_R = 55°$

D. $\theta_R = 60°$

E. None of the above

13. Approximate $\sec(5.6\pi)$ to four decimal places.
(Check the mode on your calculator)

A. 0.9984

B. −1.0515

C. 0.0568

D. 3.2361

E. None of the above

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14. Approximate, to the nearest 0.01 radians, all angles θ in the interval $[0, 2\pi)$ that satisfy the equation $\tan\theta = -1.8529$

A. $\theta = 1.08, 4.22$

B. $\theta = 2.07, 5.21$

C. $\theta = 1.08, 5.21$

D. $\theta = 2.07, 4.22$

E. None of the above

15. Find the equation, in the form $y = a\sin(bx + c)$, where $a > 0, b > 0,$ and c is the least positive real number, of the sine curve with period $= \frac{\pi}{2}$, amplitude = 3, and phase shift $= \frac{-3\pi}{8}$.

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

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

C. $y = 3\sin\left(\frac{\pi}{2}x + \frac{3\pi}{8}\right)$

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

E. None of the above.

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Exam 1 Answers

Question	Answer	Letter
1.	$18°54'48"$	D
2.	$\frac{-5\pi}{6}$	E
3.	$264.1cm^2$	C
4.	$6\sqrt{3}$	A
5.	$\frac{\sqrt{89}}{5}$	E
6.	$\tan\theta\sin\theta$	B
7.	$\left(\frac{-15}{17},\frac{8}{17}\right)$	A
8.	Only Statement I is true.	B
9.	$-\infty$	C
10.	19.7 feet	D
11.	4	A
12.	$\theta_R = 55°$	C
13.	3.2361	D
14.	$\theta = 2.07, 5.21$	B
15.	$y = 3\sin\left(4x + \frac{3\pi}{2}\right)$	D