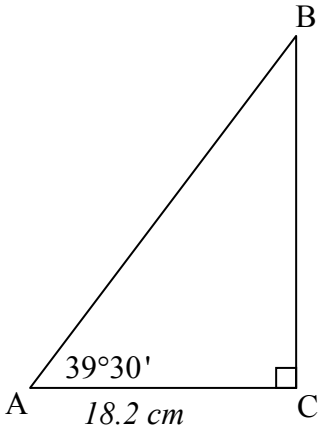
This exam covers all of Sections 6.7, 7.2, and 7.3, and Section 7.4 up to Question #25.

1. What is the perimeter of ΔABC, to the nearest tenth of a centimeter?



A. 51.4 *cm*

B. 68.9 *cm*

C. 55.2 *cm*

D. 56.8 *cm*

E. None of the above.

2. Find all solutions of the equation using *n* as an arbitrary integer.

$$\sqrt{3}\csc(\beta) - 2 = 0$$

A. $\beta = \frac{4\pi}{3} + 2\pi n, \frac{5\pi}{3} + 2\pi n$

B. $\beta = \frac{7\pi}{6} + 2\pi n, \frac{11\pi}{6} + 2\pi n$

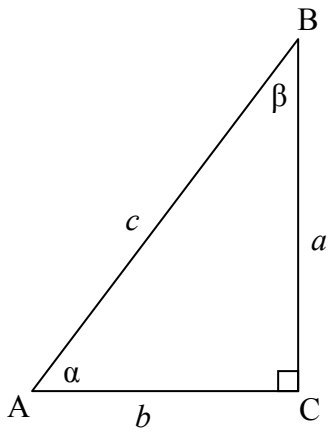
C. $\beta = \frac{\pi}{3} + 2\pi n, \frac{2\pi}{3} + 2\pi n$

D. $\beta = \frac{\pi}{6} + 2\pi n, \frac{5\pi}{6} + 2\pi n$

E. None of the above

This exam covers all of Sections 6.7, 7.2, and 7.3, and Section 7.4 up to Question #25.

3. Given ΔABC, express side b in terms of angle α and side c.



A. $b = c\sin\alpha$

B. $b = c\csc\alpha$

C. $b = c\sec\alpha$

D. $b = c\cot\alpha$

E. $b = c\cos\alpha$

4. Did you know an icosagon is a 20-sided polygon? You probably do not care; however, you never know when that knowledge will be useful…
A regular icosagon is inscribed in a circle of radius 15 cm. Approximate the perimeter of the icosagon to the nearest tenth of a centimeter.

A. $93.9\,cm$

B. $185.4\,cm$

C. $46.4\,cm$

D. $108.2\,cm$

E. None of the above

This exam covers all of Sections 6.7, 7.2, and 7.3, and Section 7.4 up to Question #25.

5. A 23 foot ladder leans against the side of a building, making a 17° angle with the building. The bottom of the ladder is lonely and wishes to be closer to the building. To the nearest tenth of a degree, what angle will the ladder make with the side of the building if the bottom of the ladder is moved 3 feet closer to the building?

A. 13.2°

B. 9.3°

C. 11.1°

D. 14.5°

E. None of the above

Problems 6 and 7: An airplane, traveling at 300 miles per hour, leaves Point A and travels in the direction of 122° for 2 hours. It then heads in a direction of 32° for 1 hour.

6. To the nearest whole degree, what direction does it travel to return to Point A?

A. 258°

B. 281°

C. 239°

D. 275°

E. None of the above

7. To the nearest tenth of an hour, how long will it take to return to Point A?

A. 2.6 hours

B. 3.0 hours

C. 2.2 hours

D. 2.4 hours

E. None of the above

This exam covers all of Sections 6.7, 7.2, and 7.3, and Section 7.4 up to Question #25.

8. Find all solutions of the equation using *n* as an arbitrary integer.

$$\sqrt{3}\tan\left(\frac{1}{3}\psi\right)=1$$

A. $\psi=\frac{\pi}{3}+6\pi n$

B. $\psi=\pi+3\pi n$

C. $\psi=\frac{3\pi}{4}+6\pi n$

D. $\psi=\frac{\pi}{2}+3\pi n$

E. None of the above

9. Find the solutions of the equation that are in the interval $[0,2\pi)$.

$$\sin\left(2\mu-\frac{\pi}{4}\right)=1$$

A. $\mu=\frac{3\pi}{8},\frac{7\pi}{8},\frac{11\pi}{8},\frac{15\pi}{8}$

B. $\mu=\frac{3\pi}{8},\frac{11\pi}{8}$

C. $\mu=\frac{\pi}{4},\frac{\pi}{2},\frac{5\pi}{4},\frac{3\pi}{2}$

D. $\mu=\frac{\pi}{4},\frac{5\pi}{4}$

E. None of the above

This exam covers all of Sections 6.7, 7.2, and 7.3, and Section 7.4 up to Question #25.

10. Find the solutions of the equation that are in the interval $[0, 2\pi)$.

$2\cos^2 x - 3\cos x + 1 = 0$

A. $x = 0, \frac{\pi}{6}, \frac{11\pi}{6}$

B. $x = \frac{\pi}{2}, \pi, \frac{3\pi}{2}$

C. $x = 0, \frac{\pi}{3}, \frac{5\pi}{3}$

D. $x = \frac{5\pi}{6}, \pi, \frac{7\pi}{6}$

E. None of the above

11. Express as a trigonometric function of one angle

$\sin 54° \cos 12° - \cos 54° \sin 12°$

A. $\cos 42°$

B. $\sin 66°$

C. $\sin 42°$

D. $\cos 66°$

E. None of the above

This exam covers all of Sections 6.7, 7.2, and 7.3, and Section 7.4 up to Question #25.

12. Did you know $\frac{19\pi}{12} = \frac{4\pi}{3} + \frac{\pi}{4}$? You probably do not care; however, you never know when that knowledge will be useful…

Find the exact value of $\cos\left(\frac{19\pi}{12}\right)$.

A. $\frac{-1+\sqrt{2}}{2}$

B. $\frac{-\sqrt{6}-\sqrt{2}}{4}$

C. $\frac{-1-\sqrt{2}}{2}$

D. $\frac{\sqrt{2}-\sqrt{6}}{4}$

E. $\frac{\sqrt{6}-\sqrt{2}}{4}$

13. Which of the following is equivalent to $\sin\left(\theta - \frac{\pi}{2}\right)$?

A. $-\sin\theta$

B. $\cos\theta$

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

D. $-\cos\theta$

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

This exam covers all of Sections 6.7, 7.2, and 7.3, and Section 7.4 up to Question #25.

14. Find the exact value of $\sin(2\theta)$ if $90° < \theta < 180°$ and $\csc\theta = \frac{7}{6}$.

A. $\frac{-12\sqrt{13}}{49}$

B. $\frac{23}{49}$

C. $\frac{12\sqrt{13}}{49}$

D. $\frac{-23}{49}$

E. None of the above

15. If α and β are section-quadrant angles such that $\sin\alpha = \frac{4}{5}$ and $\tan\beta = \frac{-24}{7}$, find $\tan(\alpha+\beta)$.

A. $\frac{-44}{125}$

B. $\frac{4}{3}$

C. $\frac{44}{125}$

D. $\frac{-4}{3}$

E. None of the above

This exam covers all of Sections 6.7, 7.2, and 7.3, and Section 7.4 up to Question #25.

Exam 2 Answers

Question	Answer	Form A Green
1.	56.8 cm	D
2.	$\beta = \frac{\pi}{3} + 2\pi n, \frac{2\pi}{3} + 2\pi n$	C
3.	$b = c\cos\alpha$	E
4.	$93.9\,cm$	A
5.	9.3°	B
6.	275°	D
7.	2.2 hours	C
8.	$\psi = \frac{\pi}{2} + 3\pi n$	D
9.	$\mu = \frac{3\pi}{8}, \frac{11\pi}{8}$	B
10.	$x = 0, \frac{\pi}{3}, \frac{5\pi}{3}$	C
11.	$\sin 42°$	C
12.	$\frac{\sqrt{6} - \sqrt{2}}{4}$	E
13.	$-\cos\theta$	D
14.	$\frac{-12\sqrt{13}}{49}$	A
15.	$\frac{4}{3}$	B