

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

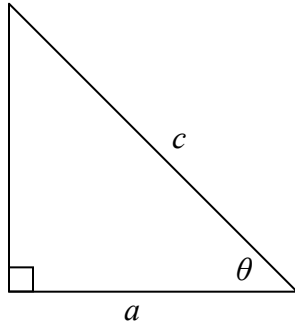
1. Find the angle that is **complementary** to $12^{\circ}5'17''$
 - A. $167^{\circ} 7' 50''$
 - B. $77^{\circ} 54' 43''$
 - C. $77^{\circ} 7' 50''$
 - D. $167^{\circ} 54' 43''$
 - E. None of the above.

2. Find the length of the arc subtended by the central angle that creates a sector of area 28.17 cm^2 in a circle of radius 5.1 cm. Please round your answer to the nearest hundredths of a centimeter.
 - A. 22.68 cm
 - B. 5.52 cm
 - C. 13.09 cm
 - D. 11.05 cm
 - E. None of the above.

3. A pendulum in a grandfather clock is 5 feet long and swings back and forth along an 8-inch arc. Approximate the angle through which the pendulum passes during one swing to the nearest tenth of a degree. (12 inches = 1 foot)
 - A. 7.6°
 - B. 9.5°
 - C. 12.7°
 - D. 9.9°
 - E. None of the above.

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4. Given the following triangle, express $\tan \theta$ in terms of a and c .



A. $\tan \theta = \frac{\sqrt{c^2 - a^2}}{c}$

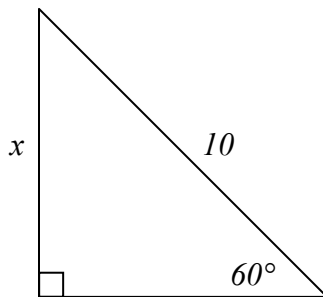
B. $\tan \theta = \frac{c - a}{a}$

C. $\tan \theta = \frac{\sqrt{c^2 - a^2}}{a}$

D. $\tan \theta = \frac{c - a}{c}$

E. None of the above.

5. Find the **exact** value of x .



A. $5\sqrt{3}$

B. 5

C. $5\sqrt{2}$

D. $\frac{10\sqrt{3}}{3}$

E. None of the above

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6. The Mentone Egg, located in Mentone Indiana, is made of concrete and weighs 3,000 pounds. It was originally constructed in 1946 to advertise the local egg festival. It's inscribed with "**The Egg Basket of the Midwest**," and a basket of eggs within an outline-shape of Indiana. From point on the ground, 13 feet from the base of the egg, the angle to between the ground and the top of the egg is 37° . What is the height of the egg to the nearest tenth of a foot? (If you are from Mentone, that's great, however, work the problem. Also, do not try to answer the question by comparing the egg to the surroundings.)



- A. 11.6 feet
B. 17.3 feet
C. 7.8 feet
D. 9.8 feet
E. None of the above.
7. Approximate $\sec(34^\circ 45')$ to four decimal places.
- A. 1.7678
B. 1.2171
C. 1.2127
D. 1.7544
E. None of the above.

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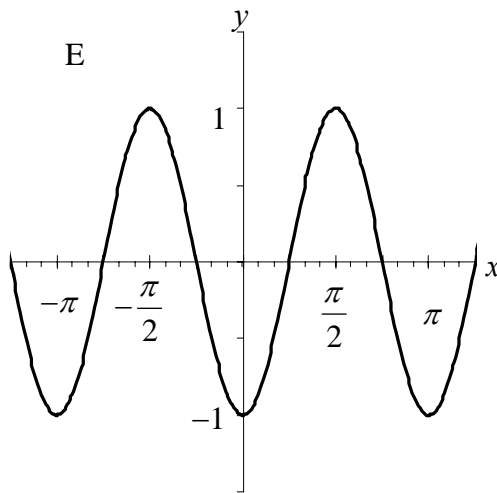
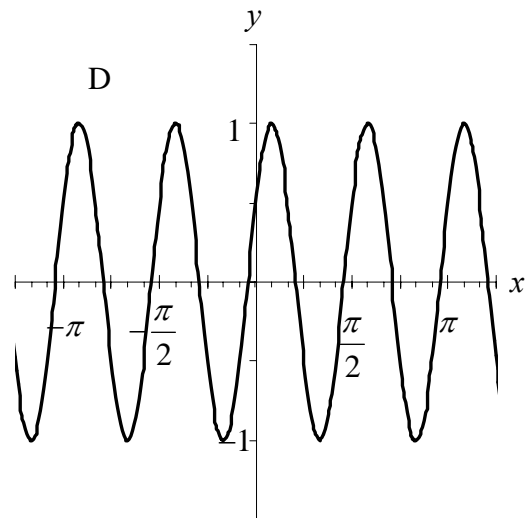
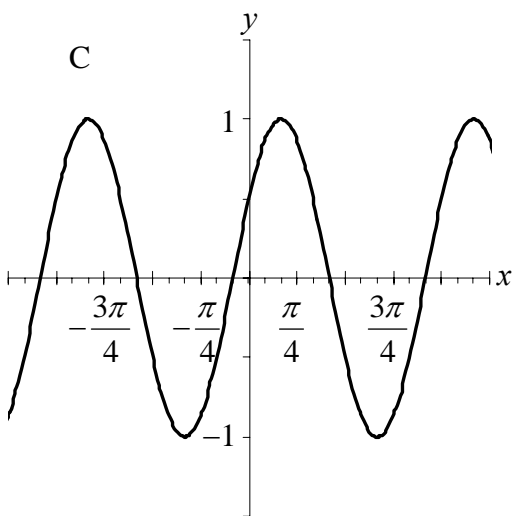
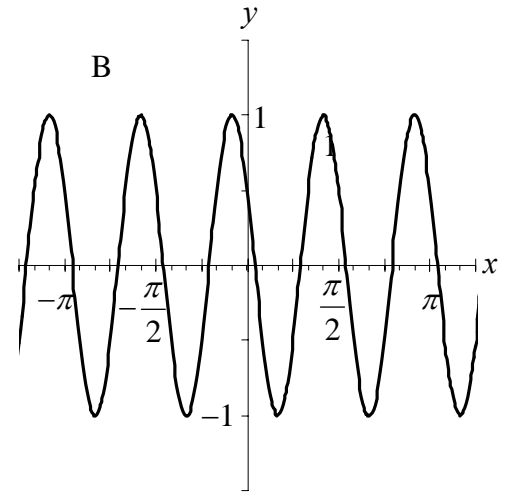
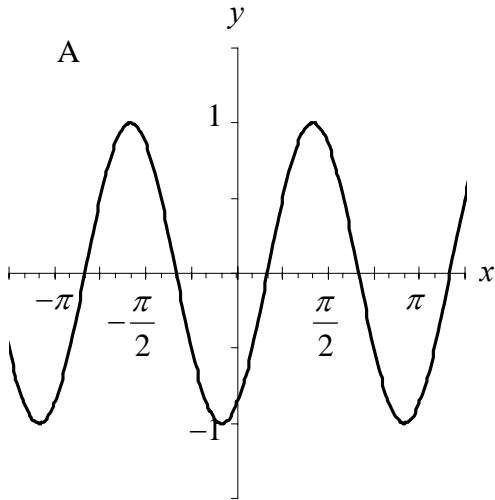
8. $(\cot \theta + \csc \theta)(\tan \theta - \sin \theta)$ is equivalent to which of the following?
- A. $\sec \theta \cos \theta - 2$
 - B. $\csc \theta - \sin \theta$
 - C. $\sec \theta - \cos \theta$
 - D. $\sec \theta - \cos \theta + 2$
 - E. $\csc \theta \sin \theta$
9. Which quadrant contains θ if $\cos \theta < 0$ and $\tan \theta < 0$?
- A. *QI*
 - B. *QII*
 - C. *QIII*
 - D. *QIV*
 - E. No such θ exist.
10. Let $P(t)$ be the point on the unit circle U that corresponds to angle t . If $P(t)$ has the rectangular coordinate $\left(\frac{15}{17}, \frac{-8}{17}\right)$, what is the coordinate for $P(-t + \pi)$
- 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

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11. Complete the statement: As $x \rightarrow \left(\frac{-\pi^+}{2}\right)$, $\tan(x) \rightarrow$ _____
- A. ∞
 - B. 0
 - C. $-\infty$
 - D. Undefined
 - E. None of the above
12. Find the reference angle, θ_R , if $\theta = 99$. Round your answer to two decimal places.
- A. 2.11
 - B. 0.04
 - C. 0.75
 - D. 1.53
 - E. None of the above
13. Approximate, to the nearest 0.01 **radians**, all angles θ in the interval $[0, 2\pi)$ that satisfy the equation $\cot \theta = -0.4938$.
- A. 1.11, 5.17
 - B. 2.03, 5.17
 - C. 2.03, 4.25
 - D. 1.11, 4.25
 - E. None of the above

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14. Which of the following is the graph of $y = \cos\left(2x - \frac{\pi}{3}\right)$?



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15. Find the equation, in the form $y = a \sin(bx + c)$ for $a > 0$, $b > 0$, and least positive real number c , for the function that Amplitude = 6, Period = $\frac{\pi}{2}$, and Phase Shift = $-\frac{\pi}{4}$.

A. $y = 6 \sin(2x + 8\pi)$

B. $y = 6 \sin\left(\frac{\pi}{2}x + \frac{\pi}{4}\right)$

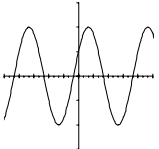
C. $y = 6 \sin\left(\frac{\pi}{4}x + 8\pi\right)$

D. $y = 6 \sin(4x + \pi)$

E. None of the above

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Exam Answers

Question	Answer	Letter
1.	$77^\circ 54' 43''$	B
2.	11.05 cm	D
3.	7.6°	A
4.	$\tan \theta = \frac{\sqrt{c^2 - a^2}}{a}$	C
5.	$5\sqrt{3}$	A
6.	9.8 feet	D
7.	1.2171	B
8.	$\sec \theta - \cos \theta$	C
9.	<i>QII</i>	B
10.	$\left(\frac{-15}{17}, \frac{-8}{17}\right)$	A
11.	$-\infty$	C
12.	1.53	D
13.	2.03, 5.17	B
14.		C
15.	$y = 6\sin(4x + \pi)$	D