

Alg 2B Test #1 Review Spring 2018

Special Right Triangles, Right Triangle Trigonometry, Sec 13-2 and 13-3, and the Unit Circle.

Round decimal answers to the nearest hundredth unless otherwise noted. Give degree answers to the nearest hundredth and radian answers to in reduced form and in terms of π .

1. Find both a positive and a negative coterminal angle for the given angle. Give your answer in the same form as the original angle.

- a) $-\frac{56\pi}{13}$ b) 752° c) -1960° d) $\frac{18\pi}{7}$

2. Find the measure of an angle between 0° and 360° (0 to 2π) that is coterminal with each given angle. Give your answer in the same form as the original angle.

- a) 745° b) -395° c) $\frac{19\pi}{4}$ d) $-\frac{25\pi}{6}$

3. Convert each radian measure into degrees. Round to the nearest hundredth when needed.

- a) $\frac{7\pi}{15}$ b) $\frac{13\pi}{8}$

4. Convert each degree measure into radians. Leave answer in term of π and reduce.

- a) 600° b) 72°

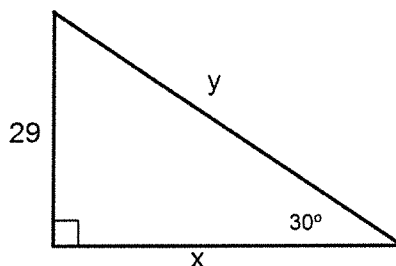
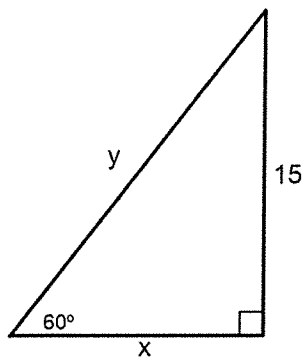
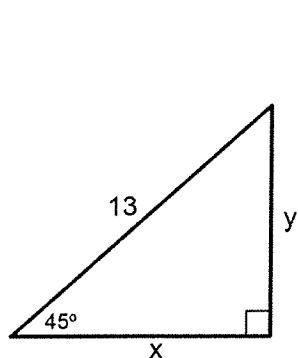
5. Use the unit circle to find the exact values of each.

- a) $\sin 630^\circ$ b) $\cos 510^\circ$ c) $\tan \frac{2\pi}{3}$ d) $\cos \frac{10\pi}{3}$ e) $\sin(-30^\circ)$ f) $\tan 9\pi$

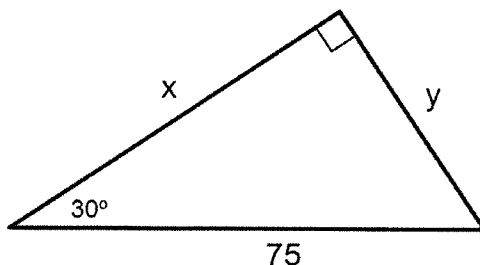
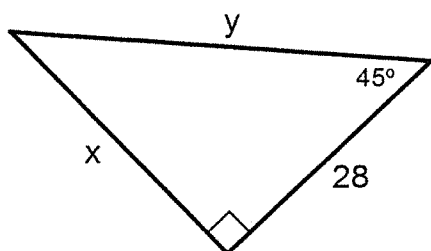
- g) $\tan 270^\circ$ h) $\tan \frac{5\pi}{4}$ i) $\sin \frac{13\pi}{4}$ j) $\cos(-\frac{7\pi}{6})$ k) $\tan \frac{\pi}{6}$

6. Find the EXACT value of x and y in each triangle.

- a) b) c)

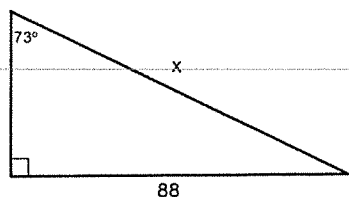


- d) e)

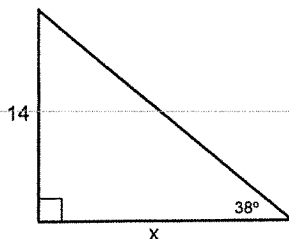


7. Find the value of x in each triangle to the nearest hundredth.

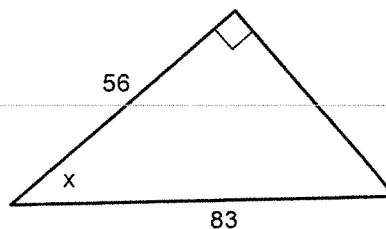
a)



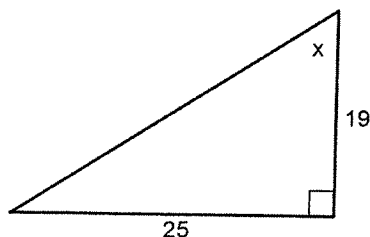
b)



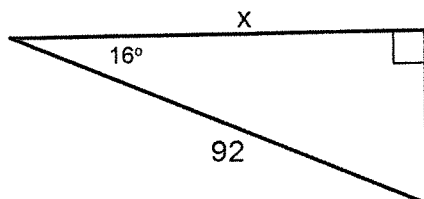
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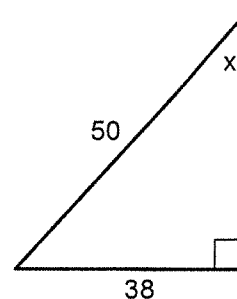
d)



e)



f)



8. To get a motorcycle into the back of a truck the owner needs a ramp. The back of the truck is 42 inches off the ground. The ramp is designed to make a 35° with the ground. Find the length of a board needed to make the ramp.

9. As a plane just crosses over the local river the pilot sees the end of the runway with an angle of depression of 21° . At that instant the plane is at an altitude of 1500 ft. How far from the end of the runway is the river?

10. A scientist holding onto the rope attached to a weather balloon at eye level sees the balloon with an angle of elevation of 77° . The scientists eyes are 6ft above the ground. If the rope is 200 feet long find the height of the balloon.

11. Are these angles coterminal?

- a) -841° and 1859° b) $-\frac{17\pi}{6}$ and $\frac{31\pi}{6}$ c) 2540° and 4700° d) $\frac{11\pi}{13}$ and $\frac{102\pi}{13}$

12. State in which Quadrant or on which Axis the terminal side of each angle is located?

- a) 1702° b) $\frac{25\pi}{2}$ c) -793° d) 1955° e) -2610°

- f) $-\frac{37\pi}{3}$ g) $\frac{50\pi}{7}$ h) 2880° i) 41π j) $\frac{74\pi}{11}$

13. Find all angles between 0° and 360° that meet the given condition.

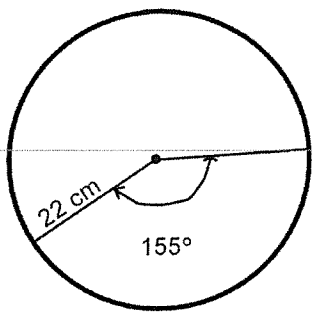
- a) $\sin \theta = \frac{1}{2}$ b) $\cos \theta = -\frac{\sqrt{2}}{2}$ c) $\sin \theta = -1$ d) $\tan \theta = \sqrt{3}$
 e) $\cos \theta = 0$ f) $\tan \theta = -\frac{\sqrt{3}}{3}$ g) $\sin \theta = \frac{\sqrt{3}}{2}$ h) $\tan \theta$ is undefined.
 i) $\cos \theta = -\frac{1}{2}$ j) $\tan \theta = 1$ k) $\cos \theta = \frac{\sqrt{3}}{2}$ m) $\tan \theta = 0$

14. Given $\tan \theta > 0$ and $\sin \theta = -\frac{\sqrt{3}}{2}$, Find the measure of θ ($0^\circ \leq \theta \leq 360^\circ$).

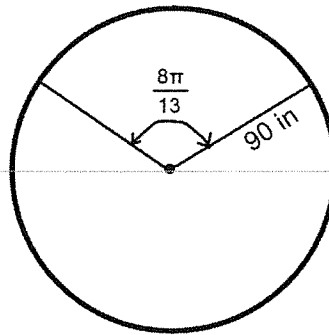
15. Given $\tan \theta = -\sqrt{3}$ and $270^\circ \leq \theta \leq 360^\circ$ find $\sin \theta$.

16. Find the arc length for each indicated angle. Round to the nearest hundredth. (see next page)

16 a)



16 b)



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ANSWERS

1. There is an infinite number of possible answers. Some examples are given.

- a) $Pos : \frac{22\pi}{13}, \frac{48\pi}{13}, \dots$ $Neg : \frac{-4\pi}{13}, \frac{-30\pi}{13}, \frac{-82\pi}{13}, \dots$ b) $Pos : 32^\circ, 392^\circ, 1112^\circ, \dots$ $Neg : -328^\circ, -688^\circ, \dots$
 c) $Pos : 200^\circ, 560^\circ, \dots$ $Neg : \dots -1600^\circ - 2320^\circ, \dots$ d) $Pos : \frac{4\pi}{7}, \frac{32\pi}{7}, \dots$ $Neg : \frac{-10\pi}{7}, \frac{-24\pi}{7}, \dots$

2. a) 25° b) 325° c) $\frac{3\pi}{4}$ d) $\frac{11\pi}{6}$ 3. a) 84° b) 292.5° 4. a) $\frac{10\pi}{3}$ b) $\frac{2\pi}{5}$

5. a) -1 b) $-\frac{\sqrt{3}}{2}$ c) $-\sqrt{3}$ d) $-\frac{1}{2}$ e) $-\frac{1}{2}$ f) 0 g) *Undefined* h) 1 i) $-\frac{\sqrt{2}}{2}$ j) $-\frac{\sqrt{3}}{2}$ k) $\frac{\sqrt{3}}{3}$

6. a) $x = y = \frac{13\sqrt{2}}{2}$ b) $x = 5\sqrt{3}$ $y = 10\sqrt{3}$ c) $x = 29\sqrt{3}$ $y = 58$

- d) $x = 28$ $y = 28\sqrt{2}$ e) $x = \frac{75\sqrt{3}}{2}$ $y = \frac{75}{2}$

7. a) $x = 92.02$ b) $x = 17.92$ c) $x = 47.57^\circ$ d) $x = 52.77^\circ$ e) $x = 88.44$ f) $x = 49.46^\circ$

8. Ramp = 73.22 inches long

9. $x = 3907.63$ ft

10. $x = 194.87$ ft Total height above the ground = $194.87 + 6 = 200.87$ ft

11. a) No b) Yes c) Yes d) No

12. a) Quad III b) Pos y-axis c) Quad IV d) Quad II e) Neg y-axis f) Quad IV
 g) Quad III h) Pos x-axis i) Neg x-axis j) Quad II

13. a) $30^\circ, 150^\circ$ b) $135^\circ, 225^\circ$ c) 270° d) $60^\circ, 240^\circ$ e) $90^\circ, 270^\circ$ f) $150^\circ, 330^\circ$ g) $60^\circ, 120^\circ$
 h) $90^\circ, 270^\circ$ i) $120^\circ, 240^\circ$ j) $45^\circ, 225^\circ$ k) $30^\circ, 330^\circ$ m) $0^\circ, 180^\circ, 360^\circ$

14. $\theta = 240^\circ$ 15. $\sin \theta = -\frac{\sqrt{3}}{2}$

16 a) 59.52 cm

b) 174.00 in