

Pre-Calculus

Name Key

Sections 4.1-4.4 Review


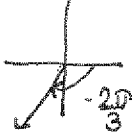

Find two coterminal angles (one positive and one negative) for each angle.

1. 50° $50 + 360 = 410^\circ$ $50 - 360 = -310^\circ$ 2. $\frac{3\pi}{5}$ $\frac{3\pi}{5} + 2\pi = \frac{13\pi}{5}$ $\frac{3\pi}{5} - 2\pi = -\frac{7\pi}{5}$

If possible, find the complement and supplement for each angle.

3. 110° $180 - 110 = 70^\circ$ - Supplement
 NO complement
4. $\frac{\pi}{5}$ Complement: $\frac{\pi}{2} - \frac{\pi}{5} = \frac{3\pi}{10}$
 Supplement: $\pi - \frac{\pi}{5} = \frac{4\pi}{5}$

Sketch the angles in standard position.

5. 110° 
6. $-\frac{2\pi}{3}$ 
7. $\frac{7\pi}{4}$ 

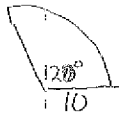
Convert each angle to radian measure.

8. $36^\circ \frac{\pi}{180} = \frac{\pi}{5}$ 9. $150^\circ \frac{\pi}{180} = \frac{5\pi}{6}$ 10. $-135^\circ \frac{\pi}{180} = -\frac{3\pi}{4}$

Convert each angle to degree measure.


11. $\frac{5\pi}{2} \cdot \frac{180}{\pi} = 450^\circ$ 12. $\frac{7\pi}{4} \cdot \frac{180}{\pi} = 315^\circ$ 13. $\frac{3\pi}{10} \cdot \frac{180}{\pi} = 54^\circ$

14. Find the area of the sector if $\theta = 120^\circ$ and $r = 10$ cm.



$$\frac{120^\circ}{360^\circ} (\pi (10)^2) = \frac{100\pi}{3} = 33.3\pi \approx 608.50514 \text{ cm}^2$$

15. Find the length of the arc of a circle with radius 4 inches if $\theta = 150^\circ$.



$$\frac{150}{360} 2\pi(4) = 3.3\pi \text{ in} \approx 10.472 \text{ in}$$

16. If $\cos \theta = \frac{\sqrt{7}}{4}$, use the trig identities to find the indicated trig functions.

a. $\sin \theta$

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$\sin^2 \theta + \frac{7}{16} = 1$$

$$\sqrt{\sin^2 \theta} = \sqrt{\frac{9}{16}}$$

$$\sin \theta = \frac{3}{4}$$

b. $\sin(90 - \theta)$

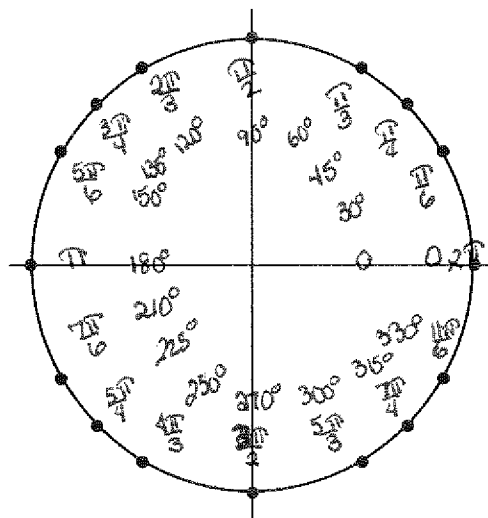
$$\sin(90 - \theta) = \cos \theta = \frac{\sqrt{7}}{4}$$

b. $\tan \theta$

$$\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{\frac{3}{4}}{\frac{\sqrt{7}}{4}} = \frac{3}{\sqrt{7}}$$

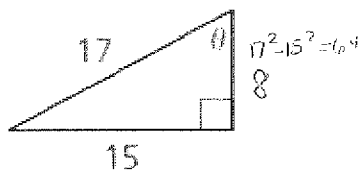
$$\tan \theta = \frac{3\sqrt{7}}{7}$$

17. Fill out the unit circle in degree and radian measure.



Evaluate the six trig functions for the triangles below.

18.

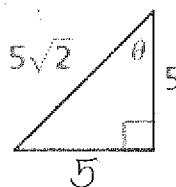


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$$\sin \theta = \frac{15}{17} \quad \cos \theta = \frac{8}{17} \quad \tan \theta = \frac{15}{8}$$

$$\csc \theta = \frac{17}{15} \quad \sec \theta = \frac{17}{8} \quad \cot \theta = \frac{8}{15}$$

19.



$$(5)^2 - 5^2 = 0$$

$$\frac{5}{5\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\sin \theta = \frac{\sqrt{2}}{2} \quad \cos \theta = \frac{\sqrt{2}}{2} \quad \tan \theta = 1$$

$$\csc \theta = \sqrt{2} \quad \sec \theta = \sqrt{2} \quad \cot \theta = 1$$

20. Evaluate the six trig functions at $t = \frac{11\pi}{6}$ (330°) in Quad IV

$$\sin \frac{11\pi}{6} = -\frac{1}{2} \quad \cos t = \frac{\sqrt{3}}{2} \quad \tan t = -\frac{\sqrt{3}}{3}$$

$$\csc t = -2 \quad \sec t = \frac{2\sqrt{3}}{3} \quad \cot t = -\sqrt{3}$$

21. Use a calculator to evaluate the following to three decimal places.

a. $\csc 76^\circ$

$$\frac{1}{\sin 76} \quad 1.031$$

b. $\cos 240^\circ$

$$-0.5$$

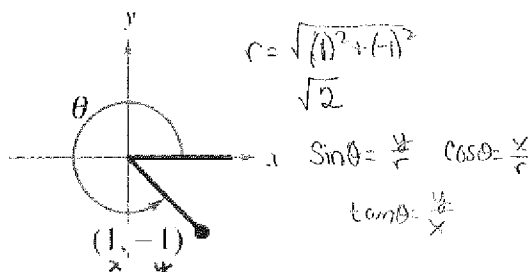
c. $\sin \frac{11\pi}{5}$

$$.588$$

d. $\tan 2.2$

$$-1.374$$

22. Determine the exact values of the six trig functions for angle θ .



$$\sin \theta = -\frac{\sqrt{2}}{2} \quad \cos \theta = \frac{\sqrt{2}}{2} \quad \tan \theta = -1$$

$$\csc \theta = -\sqrt{2} \quad \sec \theta = \sqrt{2} \quad \cot \theta = -1$$

23. Fill out the table below.

θ (degrees)	0°	30°	45°	60°	90°	180°	270°
θ (radians)	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$
$\sin \theta$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	0	-1
$\cos \theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	-1	0
$\tan \theta$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	und.	0	und.

$$\frac{\sqrt{0}}{2} \quad \frac{\sqrt{1}}{2} \quad \frac{\sqrt{2}}{2} \quad \frac{\sqrt{3}}{2} \quad \frac{\sqrt{4}}{2}$$