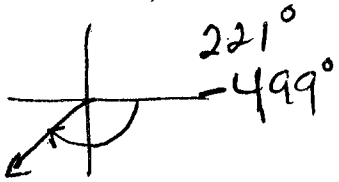
Honors Pre-Calculus Worksheet 4.1-4.4 Name Key

1. Sketch the angle in standard position, find one positive and one negative coterminal angle.

a) $-139°$

$221°$

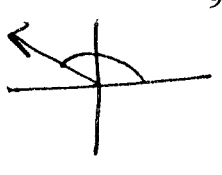
$-499°$



b) $\frac{7\pi}{9}$

$\frac{25\pi}{9}$

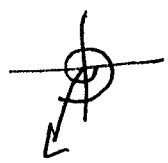
$\frac{-11\pi}{9}$



c) $-\frac{21\pi}{8}$

$-\frac{5\pi}{8}$ $-\frac{37\pi}{8}$

$\frac{11\pi}{8}$



2. Find the complement and supplement of each.

a) $24°$

$66°$

$156°$

b) $\frac{2\pi}{7}$

$\frac{3\pi}{14}$

$\frac{5\pi}{7}$

c) $\frac{13\pi}{21}$

None

$\frac{8\pi}{21}$

3. Find the reference angle and an angle that is coterminal to each.

a) $-227°$

$47°$

$133°, -587°$

b) $-\frac{23\pi}{5}$

$\frac{2\pi}{5}$

$-\frac{13\pi}{5}, -\frac{33}{5}, -\frac{3\pi}{5}$ $\frac{7\pi}{5}$

c) 2

$\pi - 2$ 1.14

$2\pi + 2$, 8.28

4. Convert the radians to degrees and the degrees to radians.

a) $140°$

$\frac{7\pi}{9}$

b) $\frac{8\pi}{15}$

$96°$

c) -3

$-171.89°$

5. Given the following find the value of the remaining 5 trig functions.

a) $\sin\theta = \frac{3}{5}, \frac{\pi}{2} < \theta < \pi$

$\csc\theta = \frac{5}{3}$

$\cos\theta = -\frac{4}{5}$ $\sec\theta = -\frac{5}{4}$

$\tan\theta = -\frac{3}{4}$ $\cot\theta = -\frac{4}{3}$

b) $\sec\theta = -\frac{\sqrt{65}}{7}, \tan\theta > 0$

$\sin\theta = -\frac{4\sqrt{65}}{65}$ $\csc\theta = -\frac{\sqrt{65}}{4}$

$\cos\theta = -\frac{7\sqrt{65}}{65}$ $\sec\theta = -\frac{\sqrt{65}}{7}$

$\tan\theta = \frac{4}{7}$ $\cot = \frac{7}{4}$

6. Find the six trig functions of an angle whose terminal side passes through the point.

a) $(-9,2)$

$\sin\theta = \frac{2\sqrt{85}}{85}$ $\csc\theta = \frac{\sqrt{85}}{2}$

$\cos\theta = -\frac{9\sqrt{85}}{85}$ $\sec\theta = -\frac{\sqrt{85}}{9}$

$\tan\theta = -\frac{2}{9}$ $\cot\theta = -\frac{9}{2}$

b) $\left(-\frac{5}{7}, \frac{2}{7}\right)$ $\sin\theta = \frac{2\sqrt{29}}{29}$ $\csc\theta = \frac{\sqrt{29}}{2}$

$\cos\theta = -\frac{5\sqrt{29}}{29}$ $\sec\theta = -\frac{\sqrt{29}}{5}$

$\tan\theta = -\frac{2}{5}$ $\cot\theta = -\frac{5}{2}$

7. Find the six trig functions of an angle whose terminal side can be represented as the following.

a) $y=\frac{2}{3}x$ in Quad. III

$\sin\theta = -\frac{2\sqrt{13}}{13}$ $\csc\theta = -\frac{\sqrt{13}}{2}$

$\cos\theta = -\frac{3\sqrt{13}}{13}$ $\sec\theta = -\frac{\sqrt{13}}{3}$

$\tan\theta = \frac{2}{3}$ $\cot\theta = \frac{3}{2}$

b) $x+5y=0$ in Quad. II

$\sin\theta = \frac{\sqrt{26}}{26}$ $\csc\theta = \frac{\sqrt{26}}{1}$

$\cos\theta = -\frac{5\sqrt{26}}{26}$ $\sec\theta = -\frac{\sqrt{26}}{5}$

$\tan\theta = -\frac{1}{5}$ $\cot\theta = -5$

8. Find θ in radians $(0 \le \theta < 2\pi)$, if there is more than one answer list all

a) $\sin\theta = -\frac{1}{2}$

$\frac{7\pi}{6}, \frac{11\pi}{6}$

b) $\tan\theta = 0$

$0, \pi$

9. Evaluate the following.

a) $\sin\left(\frac{7\pi}{4}\right)$

$-\frac{\sqrt{2}}{2}$

b) $\sec\left(-\frac{5\pi}{6}\right)$

$-\frac{2\sqrt{3}}{3}$

10. Given that $\sin\theta = \frac{2}{5}$, find.

a) $\sin(-\theta)$

$-\frac{2}{5}$

b) $\sin(\theta+\pi)$

$-\frac{2}{5}$

11. Use the unit circle on page 369 to find the following.

a) $\sin(4.25)$

$-.9$

b) $\cos(2.75)$

$-.92$

12. Use trigonometric identities to transform the left side of the equation into the right side.

a) $\cot\theta\csc\theta\cos\theta = \cot^2\theta$

b) $\cos^4\theta - \sin^4\theta = \cos^2\theta - \sin^2\theta$

13. The ceiling fan in Suzy's room rotates at 300 rpm. Each blade is 12 in long. What is the linear velocity of a piece of tape attached to the end of one of the blades?

600π ft/min 7200π in/min

14. Suzy is riding her bike at 13 mph. Her wheels have diameter of 27 in. Find the rpm of her wheel.

161.84 rpm

15. Suzy's bike has a pedal sprocket which has a radius of 2 in. It has a sprocket on the back wheel with a diameter of 7 in. The back wheel has a diameter of 26 in. How fast is Suzy traveling if she is pedaling her bike at 100 rpm?

4.42 mph