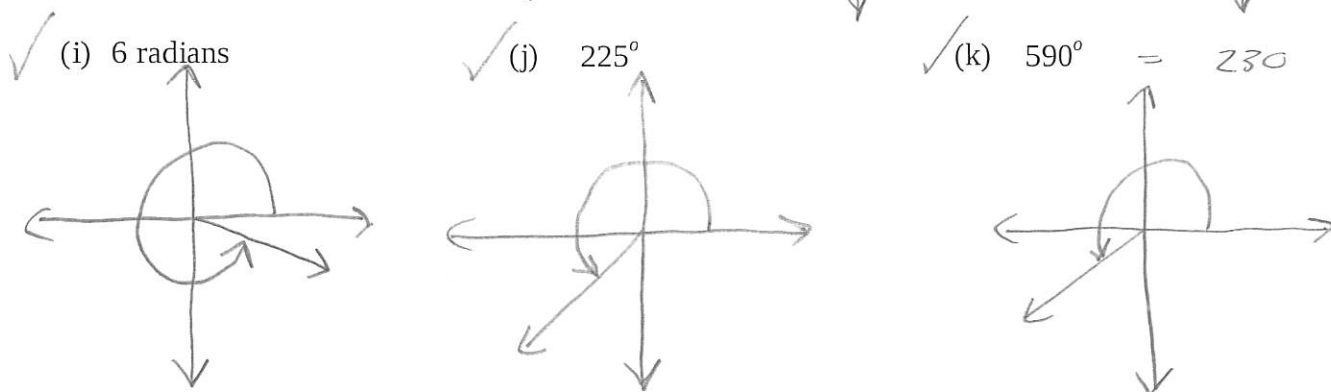
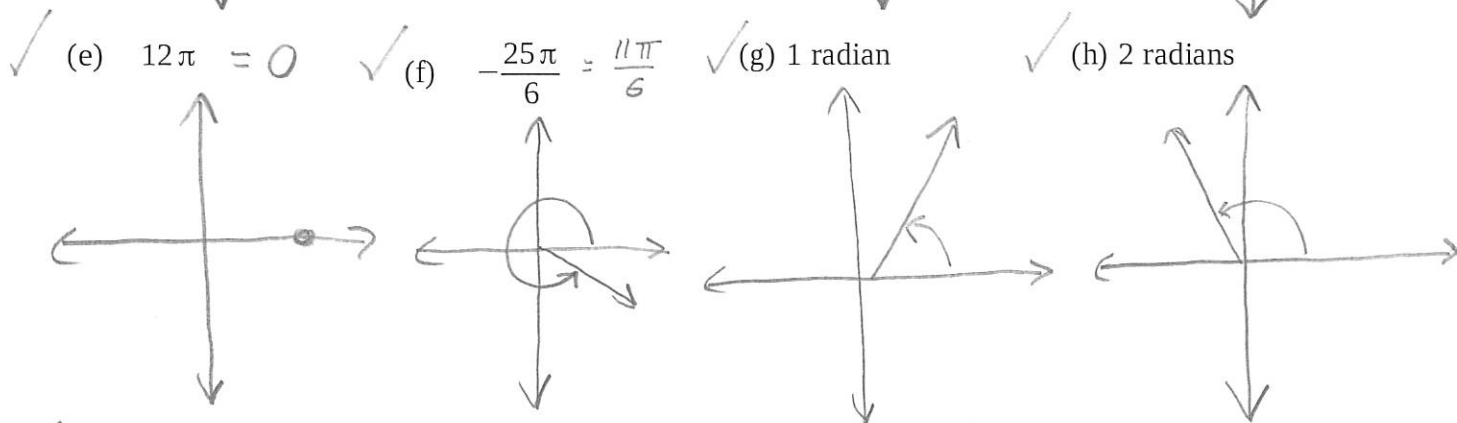
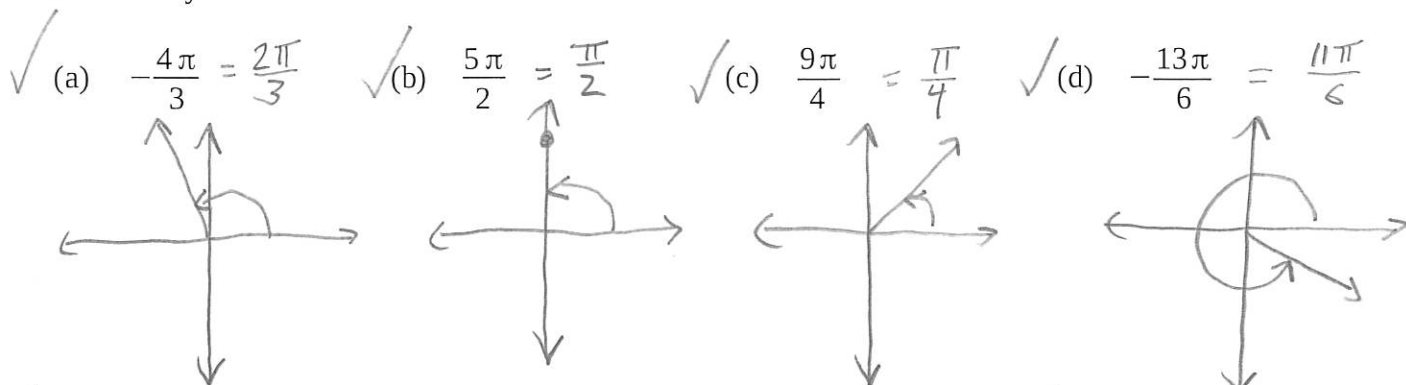
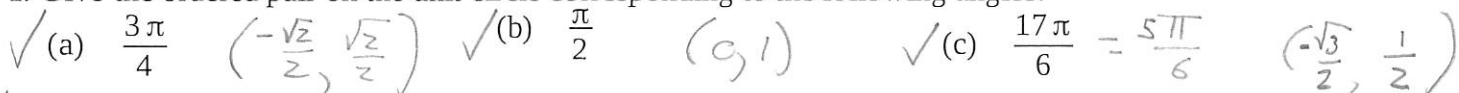


Name KEY

1. Sketch each angle in standard position. Name a coterminal angle on $[0, 2\pi)$ if the given angle is not already on that interval.



2. Give the ordered pair on the unit circle corresponding to the following angles:



✓ 3. Give the six trigonometric functions for $\theta = \frac{7\pi}{6}$

$$\begin{aligned} \sin \theta &= -\frac{1}{2} & \csc \theta &= -2 \\ \cos \theta &= -\frac{\sqrt{3}}{2} & \sec \theta &= -\frac{2\sqrt{3}}{3} \\ \tan \theta &= \frac{\sqrt{3}}{3} & \cot \theta &= \sqrt{3} \end{aligned}$$

✓ 4. Give the six trigonometric functions for $\theta = -3\pi$

$$\begin{array}{ll} \sin \theta = 0 & \csc \theta = \text{undefined} \\ \cos \theta = -1 & \sec \theta = -1 \\ \tan \theta = 0 & \cot \theta = \text{undefined} \end{array}$$

✓ 5. Give the six trigonometric functions for $\theta = -\frac{2\pi}{3} = \frac{4\pi}{3}$

$$\begin{array}{ll} \sin \theta = -\frac{\sqrt{3}}{2} & \csc \theta = -\frac{2\sqrt{3}}{3} \\ \cos \theta = -\frac{1}{2} & \sec \theta = -2 \\ \tan \theta = \sqrt{3} & \cot \theta = \frac{\sqrt{3}}{3} \end{array}$$

✓ 6. Give the six trigonometric functions for $\theta = \frac{7\pi}{4}$

$$\begin{array}{ll} \sin \theta = -\frac{\sqrt{2}}{2} & \csc \theta = -\sqrt{2} \\ \cos \theta = \frac{\sqrt{2}}{2} & \sec \theta = \sqrt{2} \\ \tan \theta = -1 & \cot \theta = -1 \end{array}$$

✓ 7. Give the six trigonometric functions for $\theta = \frac{3\pi}{2}$

$$\begin{array}{ll} \sin \theta = -1 & \csc \theta = -1 \\ \cos \theta = 0 & \sec \theta = \text{undefined} \\ \tan \theta = \text{undef.} & \cot \theta = 0 \end{array}$$

✓ 8. Give the six trigonometric functions for $\theta = -\frac{\pi}{6}$ $\theta = \frac{\pi}{6}$

$$\begin{array}{ll} \sin \theta = \frac{1}{2} & \csc \theta = 2 \\ \cos \theta = \frac{\sqrt{3}}{2} & \sec \theta = \frac{2\sqrt{3}}{3} \\ \tan \theta = \frac{\sqrt{3}}{3} & \cot \theta = \sqrt{3} \end{array}$$

✓ 9. Use your calculator to evaluate $\csc\left(-\frac{11\pi}{5}\right) \approx -1.701$

✓ 10. Determine in which quadrant θ is if $\sin \theta < 0$ and $\tan \theta < 0$

$$\begin{array}{l} \sin - \quad \text{III IV} \\ \tan - \quad \text{II IV} \end{array}$$

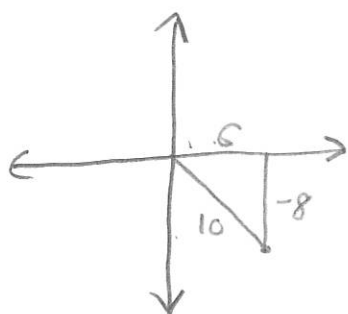
(IV)

✓ 11. Determine in which quadrant θ is if $\cos \theta < 0$ and $\tan \theta > 0$

$$\begin{array}{l} \cos - \quad \text{II III} \\ \tan + \quad \text{I III} \end{array}$$

(III)

✓ 12. Find the six trigonometric ratios for the angle whose terminal side goes through (6, -8). Draw a sketch.

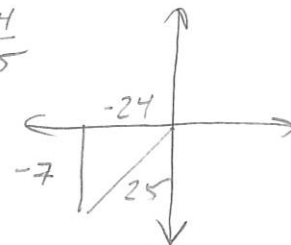


$$\begin{array}{ll} \sin \theta = -\frac{4}{5} & \csc \theta = -\frac{5}{4} \\ \cos \theta = \frac{3}{5} & \sec \theta = \frac{5}{3} \\ \tan \theta = -\frac{4}{3} & \cot \theta = -\frac{3}{4} \end{array}$$

✓ 13. Find these trigonometric ratios if $\cos \theta < 0$ and $\tan \theta = \frac{7}{24}$

(a) $\sin \theta = \frac{-7}{25}$

(b) $\cos \theta = -\frac{24}{25}$



✓ 14. Solve these simple equations for θ on the interval $[0, 2\pi)$

(a) $\cos \theta = \frac{1}{2}$

(b) $\tan \theta = 1$

(c) $\sin \theta = 0$

$\theta = \frac{\pi}{3}, \frac{5\pi}{3}$

$\theta = \frac{\pi}{4}, \frac{5\pi}{4}$

$\theta = 0, \pi$

✓ 15. Find the distance from New Orleans (latitude 30 degrees north) to the equator. The radius of earth is approximately 4,000 miles. Your answer should be exact.

$$d = \frac{30^\circ}{360^\circ} \cdot 2\pi r = \frac{1}{12} \cdot 2\pi (4000) = \frac{8000\pi}{12} = \frac{2000\pi}{3} \text{ miles}$$

✓ 16. If $\sec x = 4$ and $\sin \theta > 0$ find the following:

(a) $\cos \theta$

(b) $\cot \theta$

(c) $\cot(90 - \theta)$

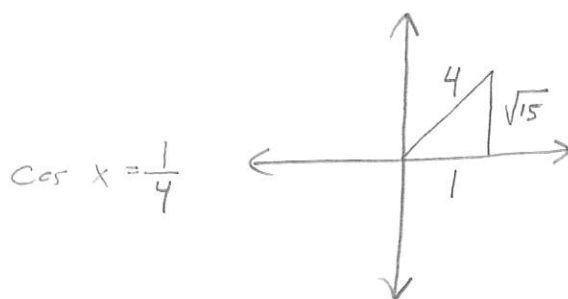
(d) $\sin \theta$

$\frac{1}{4}$

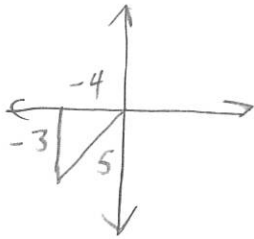
$\frac{1}{\sqrt{15}} = \frac{\sqrt{15}}{15}$

$= \tan \theta$
 $= \sqrt{15}$

$= \frac{\sqrt{15}}{4}$



✓ 17. If $\cos\theta = -\frac{4}{5}$ and θ is in quadrant III, find the other five trigonometric functions for θ .

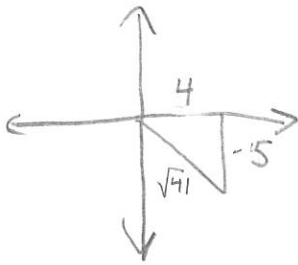


$$\sin \theta = \frac{-3}{5} \quad \csc \theta = -\frac{5}{3}$$

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

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

✓ 18. If $\tan\theta = -\frac{5}{4}$ and θ is in quadrant IV, find the other five trigonometric functions for θ .



$$\sin \theta = \frac{-5}{\sqrt{41}} = \frac{-5\sqrt{41}}{41} \quad \csc \theta = \frac{-\sqrt{41}}{5}$$

$$\cos \theta = \frac{4}{\sqrt{41}} = \frac{4\sqrt{41}}{41} \quad \sec \theta = \frac{\sqrt{41}}{4}$$

$$\cot \theta = -\frac{4}{5}$$

✓ 19. Evaluate the following:

(a) $\tan\left(-\frac{\pi}{3}\right)$

$$= \tan \frac{5\pi}{3}$$

$$= -\sqrt{3}$$

(b) $\sec \frac{7\pi}{6}$

$$= \frac{1}{\cos \frac{7\pi}{6}}$$

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

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

(c) $\cot 5\pi$

$$= \cot \pi$$

$$= \frac{1}{\tan \pi}$$

$$= \text{undefined}$$

(d) $\cos \frac{13\pi}{4}$

$$= \cos \frac{5\pi}{4}$$

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

✓ 20. Solve on the interval $[0, 2\pi)$:

(a) $\cos\theta = \frac{\sqrt{2}}{2}$

$$\theta = \frac{\pi}{4}, \frac{7\pi}{4}$$

(b) $\cot\theta = -1$

$$\theta = \frac{3\pi}{4}, \frac{7\pi}{4}$$

(c) $\sec\theta = \sqrt{2}$

$$\cos\theta = \frac{\sqrt{2}}{2}$$

$$\theta = \frac{\pi}{4}, \frac{7\pi}{4}$$

(d) $\sin\theta = 0$

$$\theta = \frac{\pi}{2}$$

21. Evaluate:

$$\checkmark (a) \arcsin\left(-\frac{\sqrt{3}}{2}\right)$$

$$\frac{-5\pi}{3}$$

$$\checkmark (b) \sin^{-1}1$$

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

$$\checkmark (c) \arccos\frac{1}{2}$$

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

$$\checkmark (d) \arctan\sqrt{3}$$

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

$$\checkmark (e) \arcsin\left(\sin\frac{\pi}{4}\right)$$

$$\frac{\pi}{4}$$

$$\checkmark (f) \cos^{-1}\left(\cos\left(-\frac{3\pi}{4}\right)\right)$$

$$= \cos^{-1}\left(\cos\frac{5\pi}{4}\right)$$

$$= \cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$$

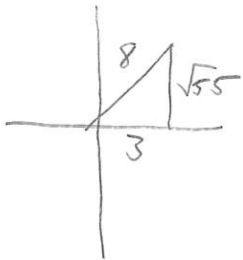
$$= \frac{3\pi}{4}$$

$$\checkmark (g) \tan(\arctan 5.6)$$

$$= 5.6$$

Q.IV.
no problem

$$\checkmark (h) \sin\left(\cos^{-1}\left(\frac{3}{8}\right)\right)$$



$$\frac{\sqrt{55}}{8}$$

$$\checkmark (i) \sin\frac{11\pi}{6} = -\frac{1}{2}$$

$$\checkmark (j) \cot\frac{\pi}{2} = 0$$

$$\checkmark (k) \sec 3\pi = \sec \pi = -1$$

$$\checkmark (l) \tan\left(-\frac{13\pi}{6}\right) = \tan\frac{11\pi}{6} = -\frac{\sqrt{3}}{3}$$