

Homework 9.3

Given below are angles whose terminal sides terminate on the unit circle. Identify the point, (x, y) , that corresponds with the given angle, θ .

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|---|---|---|--|--|
| <p>1. $\theta = \frac{5\pi}{6}$</p> <p>$(-\frac{\sqrt{3}}{2}, \frac{1}{2})$</p> | <p>2. $\theta = \frac{5\pi}{4}$</p> <p>$(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$</p> | <p>3. $\theta = \frac{5\pi}{3}$</p> <p>$(\frac{1}{2}, -\frac{\sqrt{3}}{2})$</p> | <p>4. $\theta = -\frac{4\pi}{3}$</p> <p>$(-\frac{1}{2}, \frac{\sqrt{3}}{2})$</p> | <p>5. $\theta = -\frac{3\pi}{2}$</p> <p>$(0, 1)$</p> |
|---|---|---|--|--|

Given below are angles whose terminal sides terminate on the unit circle. If the given angle is a specifically identified angle from the unit circle, identify the coordinates of the point that the terminal side of the angle passes through. If the angle is not, first identify the angle on the unit circle with which it is co-terminal. Find the exact value of the six trigonometric ratios for each angle, θ .

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| <p>6. $\theta = \frac{5\pi}{3}$</p> <p>$(\frac{1}{2}, -\frac{\sqrt{3}}{2})$</p> | <p>7. $\theta = \frac{5\pi}{6}$</p> <p>$(-\frac{\sqrt{3}}{2}, \frac{1}{2})$</p> | <p>8. $\theta = -\frac{3\pi}{2}$</p> <p>$(0, 1)$</p> |
|---|---|--|

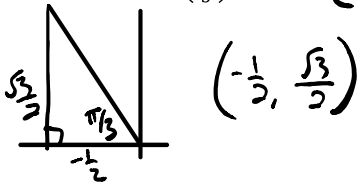
| | | |
|--|---|---|
| <p>$\sin \theta = -\frac{\sqrt{3}}{2}$ $\csc \theta = \frac{2}{\sqrt{3}}$</p> <p>$\cos \theta = \frac{1}{2}$ $\sec \theta = 2$</p> <p>$\tan \theta = -\sqrt{3}$ $\cot \theta = -\frac{1}{\sqrt{3}}$</p> | <p>$\sin \theta = \frac{1}{2}$ $\csc \theta = 2$</p> <p>$\cos \theta = -\frac{\sqrt{3}}{2}$ $\sec \theta = -\frac{2}{\sqrt{3}}$</p> <p>$\tan \theta = -\frac{1}{\sqrt{3}}$ $\cot \theta = -\sqrt{3}$</p> | <p>$\sin \theta = 1$ $\csc \theta = 1$</p> <p>$\cos \theta = 0$ $\sec \theta = \text{und}$</p> <p>$\tan \theta = \text{und}$ $\cot \theta = 0$</p> |
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| | | |
|--|---|--|
| <p>9. $\theta = \frac{7\pi}{4}$</p> <p>$(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$</p> | <p>10. $\theta = -\frac{11\pi}{6}$</p> <p>$(\frac{\sqrt{3}}{2}, \frac{1}{2})$</p> | <p>11. $\theta = -7\pi$ (4 Rev)</p> <p>co-terminal: $-7\pi + 8\pi = \pi$</p> <p>$(-1, 0)$</p> |
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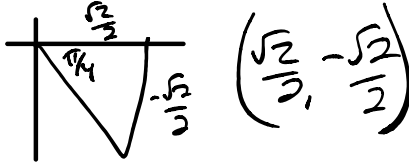
| | | |
|---|---|---|
| <p>$\sin \theta = -\frac{\sqrt{2}}{2}$ $\csc \theta = -\frac{2}{\sqrt{2}}$</p> <p>$\cos \theta = \frac{\sqrt{2}}{2}$ $\sec \theta = \frac{2}{\sqrt{2}}$</p> <p>$\tan \theta = -1$ $\cot \theta = -1$</p> | <p>$\sin \theta = \frac{1}{2}$ $\csc \theta = 2$</p> <p>$\cos \theta = \frac{\sqrt{3}}{2}$ $\sec \theta = \frac{2}{\sqrt{3}}$</p> <p>$\tan \theta = \frac{1}{\sqrt{3}}$ $\cot \theta = \sqrt{3}$</p> | <p>$\sin \theta = 0$ $\csc \theta = \text{und}$</p> <p>$\cos \theta = -1$ $\sec \theta = -1$</p> <p>$\tan \theta = 0$ $\cot \theta = \text{und}$</p> |
|---|---|---|

For each of the following angles, **identify the angle** on the unit circle, $0 < \theta \leq 2\pi$, that the given angle is coterminal with. Then, **evaluate** the indicated trigonometric ratio.

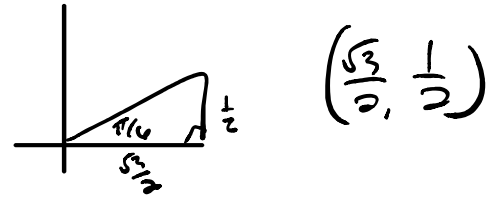
12. $\tan\left(\frac{8\pi}{3}\right) = \tan\left(\frac{2\pi}{3}\right) = -\sqrt{3}$



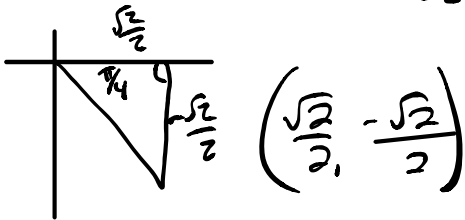
13. $\cot\left(-\frac{9\pi}{4}\right) = \cot\left(\frac{7\pi}{4}\right) = -1$



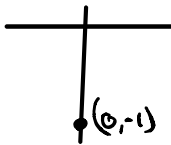
14. $\sin\left(\frac{13\pi}{6}\right) = \sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$



15. $\sec\left(\frac{15\pi}{4}\right) = \sec\left(\frac{7\pi}{4}\right) = \frac{2}{\sqrt{2}}$



16. $\csc\left(-\frac{13\pi}{2}\right) = \csc\left(\frac{3\pi}{2}\right) = -1$



17. $\tan\left(\frac{17\pi}{6}\right) = \tan\left(\frac{5\pi}{6}\right) = -\frac{1}{\sqrt{3}}$

