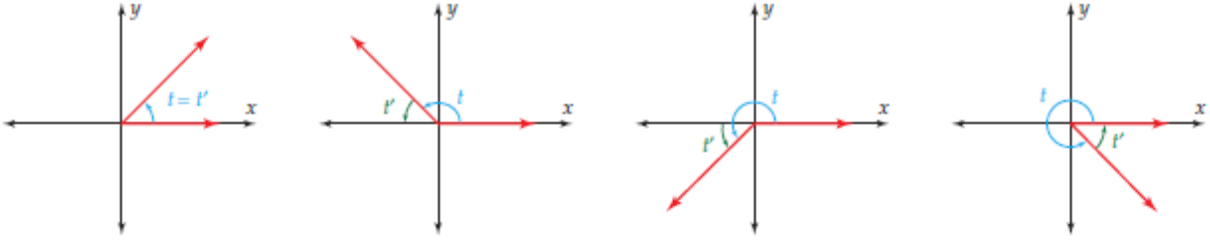


Off-Site Instruction Packet Day 7

6-4 Day 2 Trigonometric Functions

Reference Angles

For an angle θ in standard position, the *reference angle* is the _____ *positive acute angle* _____ formed by the terminal side of θ and the x -axis.



Finding Trigonometric Function Values

To find the sine, cosine, or tangent of t radians,

- Sketch an angle of t radians in standard position and determine the quadrant in which the terminal side lies
- Find the reference angle which has measure t' radians
- Find the sine, cosine, and tangent of t' and append the appropriate sign

Example 3: Using Reference Angles

Use reference angles to find the exact value of $\sin t$, $\cos t$, and $\tan t$.

a) $t = \frac{3\pi}{4}$ (135°)

$$\sin \frac{3\pi}{4} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\cos \frac{3\pi}{4} = \frac{-1}{\sqrt{2}} = -\frac{\sqrt{2}}{2}$$

$$\tan \frac{3\pi}{4} = \frac{1}{-1} = -1$$

b) $t = \frac{4\pi}{3}$ (240°)

$$\sin \frac{4\pi}{3} = \frac{-\sqrt{3}}{2}$$

$$\cos \frac{4\pi}{3} = \frac{-1}{2}$$

$$\tan \frac{4\pi}{3} = \frac{-\sqrt{3}}{-1} = \sqrt{3}$$

c) $t = \frac{11\pi}{6}$ (330°)

$$\sin \frac{11\pi}{6} = \frac{-1}{2}$$

$$\cos \frac{11\pi}{6} = \frac{\sqrt{3}}{2}$$

$$\tan \frac{11\pi}{6} = \frac{-1}{\sqrt{3}} = \frac{-\sqrt{3}}{3}$$

Trigonometric Ratios of Coterminal Angles

Any trigonometric function of real number t is equal to the same trigonometric functions of all numbers $t \pm 2k\pi$, where k is an integer.

Example 4: **Trigonometric Functions where $t > 2\pi$**

Find the sine, cosine, and tangent of $\frac{7\pi}{3}$

$$\sin \frac{7\pi}{3} = \frac{\sqrt{3}}{2}$$

$$\cos \frac{7\pi}{3} = \frac{1}{2}$$

$$\tan \frac{7\pi}{3} = \frac{\sqrt{3}}{1} = \sqrt{3}$$

Assessment:

Pg 452 #25-51 (odd)