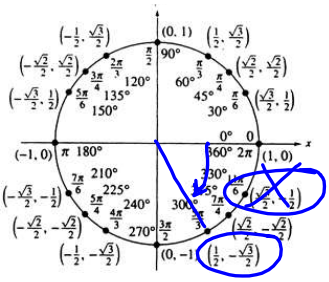
Unit 4.7 B



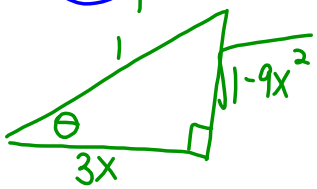
Find the Exact Value

1. $\sin^{-1}(-1/2) =$ Ratio of sides → Angle $-\frac{\pi}{6}$
2. $\tan \pi/4 =$ Angle → Ratio sides 1
3. $\sec(5\pi/6) =$ Angle → $\frac{-2}{\sqrt{3}} = \frac{-2\sqrt{3}}{3}$
4. $\cos^{-1} 1 =$ Ratio → Angle 0
5. $\tan^{-1} 1 =$ Ratio → Angle $\frac{\pi}{4}$
6. $\sin(4\pi/3) = -\frac{\sqrt{3}}{2}$
7. $\tan(3\pi/2) =$ undefined
8. $\cos^{-1}(-\sqrt{3}/2) = \frac{5\pi}{6}$
9. $\tan^{-1}(-\sqrt{3}) = -\frac{\pi}{3}$
10. $\sin^{-1} 1 = \frac{\pi}{2}$

Form an algebraic expression equivalent to the given expression. (Hint: Form a right triangle)

$\sin(\arccos 3x)$

$\sin(\cos^{-1} 3x) = \sqrt{1-9x^2}$ $\quad a^2 + 9x^2 = 1$



$a^2 = 1 - 9x^2$

$a = \sqrt{1-9x^2}$

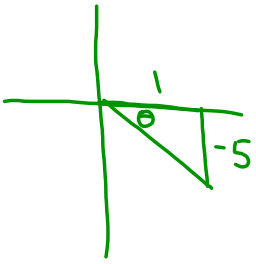
If possible, find the exact value.

a. $\tan[\arctan(-5)]$ **b.** $\arcsin\left(\sin\frac{5\pi}{3}\right)$ **c.** $\cos(\cos^{-1}\pi)$

$\tan\left(\tan^{-1}(-5)\right) = -5$

$\cos\left(\cos^{-1} 3.14\right)$

undefined



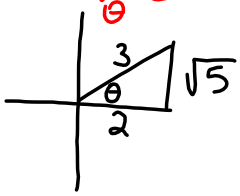
$\sin^{-1}\left(\sin\frac{5\pi}{3}\right)$

$\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right) = -\frac{\pi}{3}$

Find the exact value.

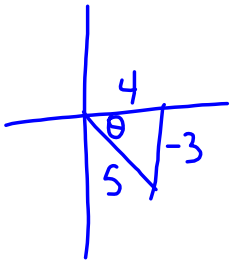
a. $\tan\left(\arccos\frac{2}{3}\right)$ **b.** $\cos\left[\arcsin\left(-\frac{3}{5}\right)\right]$

$\tan\left(\cos^{-1}(2/3)\right)$



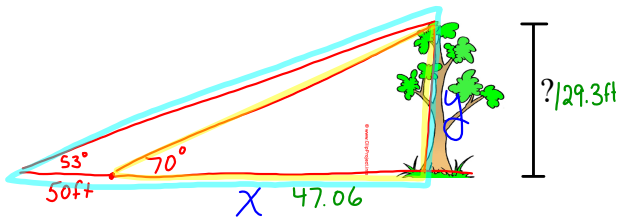
$\tan\theta = \frac{\sqrt{5}}{2}$

$\cos\left(\sin^{-1}(-3/5)\right)$



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

The angle of elevation to the top of a tree is 70°. After moving 50 feet farther away, the angle of elevation is 53°. How tall is the tree?



$x \tan 70° = \frac{y}{x}(x)$ $(x+50)\tan 53° = \frac{y}{x+50}(x+50)$

$x \tan 70° = y$ $(x+50)\tan 53° = y$

$x \tan 70° = (x+50)\tan 53°$

$x \tan 70° = x \tan 53° + 50 \tan 53°$

$x(\tan 70° - \tan 53°)$

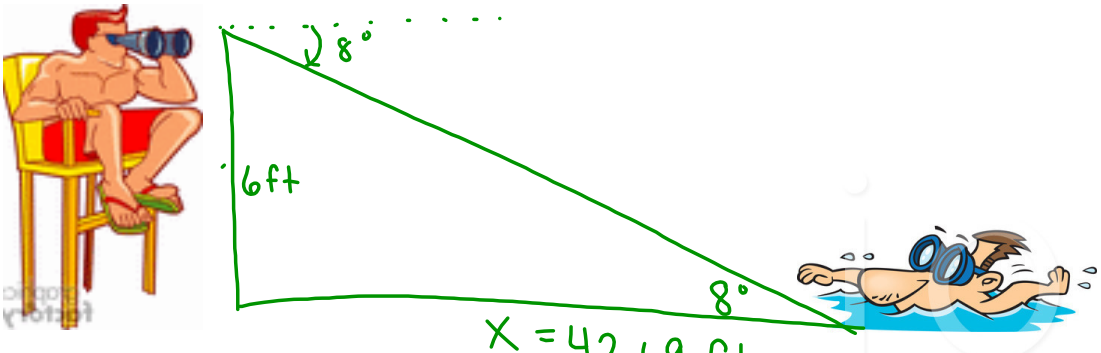
$x \tan 70° - x \tan 53° = 50 \tan 53°$

$2.74x - 1.33x = 50 \tan 53°$

$1.41x = 50 \tan 53°$

$x = \frac{50 \tan 53°}{1.41}$ $x = 47.06$ ft

A lifeguard is watching a beach from a line of sight 6 feet above the ground. He sees a swimmer at angle of depression of 8°. How far away from the tower is the swimmer?

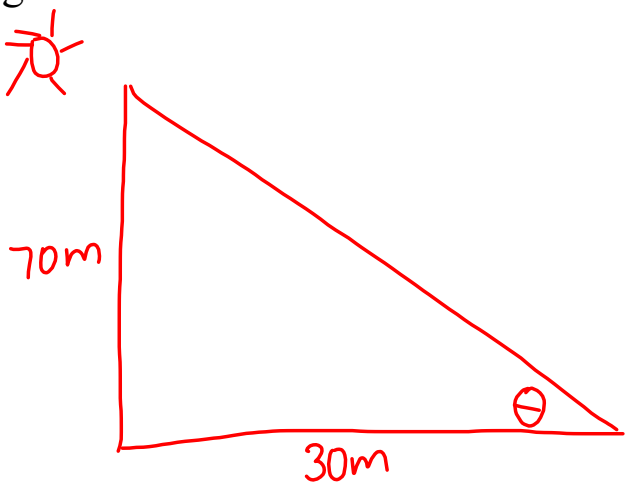


$\tan 8° = \frac{6}{x}$

$x = \frac{6}{\tan 8°}$

From the top a lighthouse 210 feet high, the angle of depression to a boat is 27°. Find the distance from the boat to the foot of the lighthouse. The lighthouse was built at sea level.

The height of a radio transmission tower is 70 meters, and it casts a shadow of length 30 meters. Draw a diagram and find the angle of elevation of the sun.



$\tan\theta = \frac{70}{30}$

$\tan^{-1}\left(\frac{70}{30}\right) = \theta$

$\theta = 66.8°$

Your football has landed at the edge of the roof of your school building. When you are 25 feet from the base of the building, the custodian who is on the roof sees you at an angle of depression of 21°. How high off the ground is your football?

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#40-72 even, 99 - 102, 104, 105, 122, 124, 126