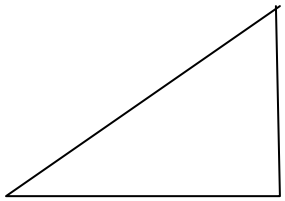
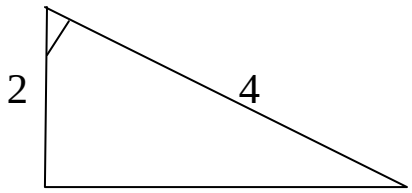
Section 5.4: Right Triangle Trigonometry

Right triangle:



Acute angle: $0^o < \theta < 90^o$

Ex: Given 

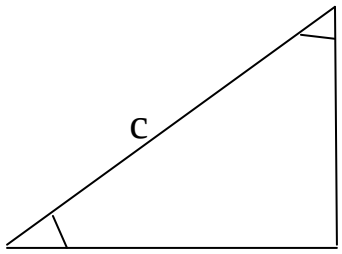
Find the exact values of all Trig. Functions.

Complementary Angles: (Cofunctions)

Two acute angles are called complementary if their sum is a right angle.

$\sin\beta =$

$\cos\alpha =$

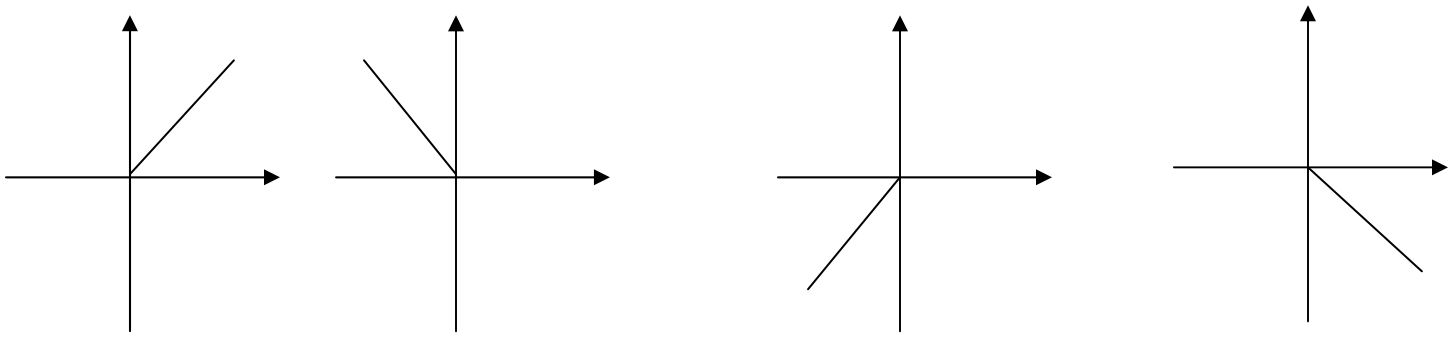


Ex:

1) $\sin(90^o - \theta) =$
2) $\cos(90^o - \theta) =$
3) $\tan(90^o - \theta) =$
4) $\csc(90^o - \theta) =$

Ex: 1) $\sin 65^o =$ 2) $\tan\dfrac{\pi}{12} =$

Reference Angle: Is the acute angle θ_R (always taken positive) between the terminal side θ and the $x-axis$



Ex: Find the reference angles for the following angles.

1) 135^o , 2) $-\frac{7\pi}{6}$, 3) 310^o , 4) $\frac{11\pi}{9}$, 5) $\frac{13\pi}{8}$

Ex: Find the exact values of

1) $\cos 210^o$, 2) $\csc 300^o$, 3) $\sin(-\frac{2\pi}{3})$, 4) $\tan(-\frac{11\pi}{6})$

5) $\tan 12^o - \cot 78^o$, 6) $1+\tan^2 5^o - \csc^2 85^o$

7) $\cos 35^o \sin 55^o + \sin 35^o \cos 55^o$

8) $\frac{\tan^2 40^o}{\cot^2 50^o} - \frac{1}{\cos^2 50^o}$, 9) $\frac{\tan^2 20^o \sin 70^o}{\sec 20^o}$

Ex: If $\cot\theta = 2$, find the exact values of

1) $\tan\theta$, 2) $\csc^2\theta$, 3) $\tan(\frac{\pi}{2}-\theta)$, 4) $\sec^2\theta$

Ex: Answer True or False

1) $\sin(-\frac{7\pi}{8}) = \sin(-\frac{\pi}{8})$, 2) $\cos(\frac{13\pi}{7}) = \cos(-\frac{\pi}{7})$,

3) $\tan(\frac{4\pi}{5}) = -\tan(-\frac{\pi}{5})$, 4) $\sec(\frac{11\pi}{18}) = \sec(-\frac{7\pi}{18})$

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Ex: Evaluate the followings

1) $\tan^2(\frac{15\pi}{8}) - \csc^2(-\frac{3\pi}{8}) - \sin^2(-\frac{7\pi}{6})$

2) $\cot^2(-\frac{4\pi}{3}) - \cos^2(-\frac{\pi}{9}) - \cos^2(\frac{11\pi}{18})$