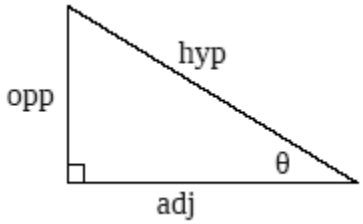
0.3 (Appendix D in text) Trigonometry

Use the fact that $180^\circ = \pi$ radians in a ratio to convert between degrees and radians.

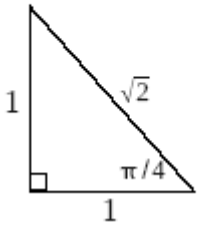
Ex0.13) How many degrees is $\frac{\pi}{5}$ radians?

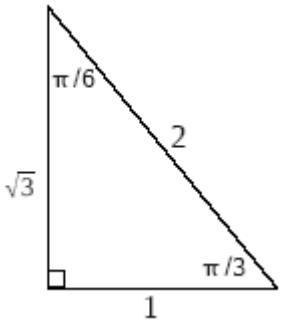
Ex0.14) How many radians is 40°?

Recall: $\sin\theta = \frac{\text{opp}}{\text{hyp}}$, $\cos\theta = \frac{\text{adj}}{\text{hyp}}$, $\boxed{\tan\theta = \frac{\text{opp}}{\text{adj}}}$



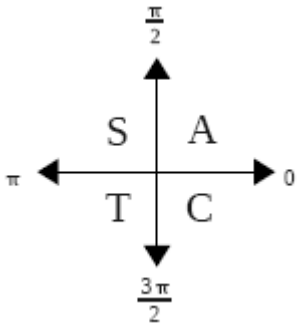
Two triangles that help with common trig ratios:





Ex0.15) $\sin\left(\frac{\pi}{4}\right) =$ $\cos\left(\frac{\pi}{6}\right) =$ $\tan\left(\frac{\pi}{3}\right) =$

Also remember “CAST”:



Ex0.16) $\sin\left(\frac{3\pi}{4}\right)=$ $\cos\left(\frac{7\pi}{6}\right)=$ $\tan\left(\frac{5\pi}{3}\right)=$

Also know the graphs of sin *x*, cos *x*, and tan *x*.

$y = \sin x$

$y = \cos x$

$y = \tan x$

Ex0.17) $\sin\left(\frac{\pi}{2}\right)=$ $\cos\left(-\frac{3\pi}{2}\right)=$ $\tan\left(2\pi\right)=$

Trig Identities:

- $\csc\theta = \dfrac{1}{\sin\theta}$
- $\sec\theta = \dfrac{1}{\cos\theta}$
- $\cot\theta = \dfrac{1}{\tan\theta}$
- $\tan\theta = \dfrac{\sin\theta}{\cos\theta}$
- $\sin^2\theta + \cos^2\theta = 1$

Know these

- $\sin 2x = 2\sin x\cos x$
- $\cos 2x = \cos^2 x - \sin^2 x$
- $\sin(x+y) = \sin x\cos y + \cos x\sin y$
- $\cos(x+y) = \cos x\cos y - \sin x\sin y$
- $\sin(x-y) = \sin x\cos y - \cos x\sin y$
- $\cos(x-y) = \cos x\cos y + \sin x\sin y$

Know of these

Ex0.18) Solve for x when $2\sin^2 x - 1 = 0$ and $x \in [0, 2\pi)$.

Ex0.19) Calculate $\sin\left(\frac{19\pi}{12}\right)$.

Continue with Appendix D ODDS.