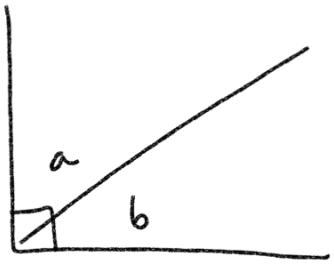
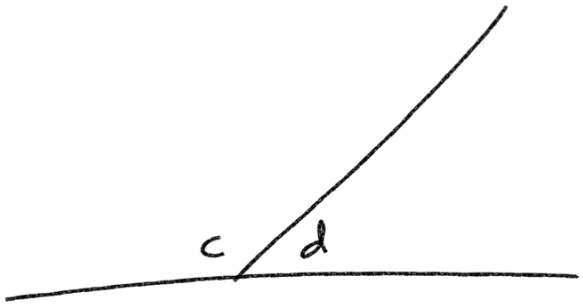
MTH-PT Trigonometry Session 8 2/20



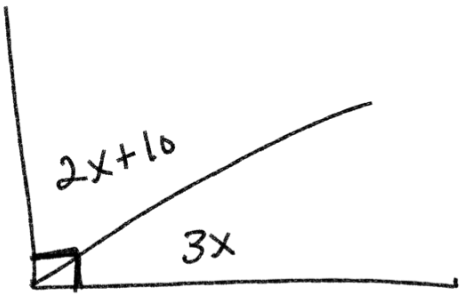
$\{ a + b = 90^\circ$

Complementary



$c + d = 180^\circ$

supplementary



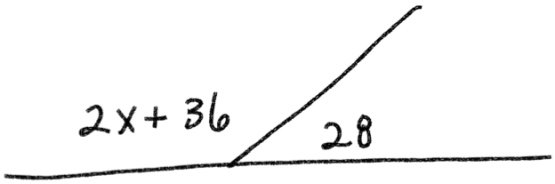
$2x + 10 + 3x = 90^\circ$

$5x + 10 = 90$

$-10 \quad -10$

$\frac{5x}{5} = \frac{80}{5}$

$\boxed{x = 16}$



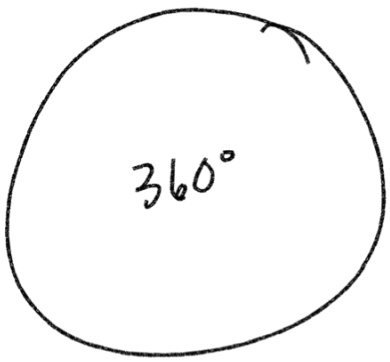
$2x + 36 + 28 = 180$

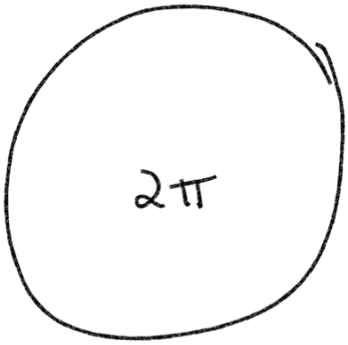
$2x + 64 = 180$

$-64 \quad -64$

$\frac{2x}{2} = \frac{116}{2}$

$\boxed{x = 58}$





$\frac{360^\circ}{2} = \frac{2\pi}{2}$

$\boxed{180^\circ = \pi}$

$45° * \frac{\pi}{180°} = \frac{45\pi}{180} \div 45 = \frac{\pi}{4}$

$\frac{\pi}{180}$ $\frac{180}{\pi}$

$\frac{3\pi}{4} * \frac{180°}{\pi} = \frac{540°}{4} = \boxed{135°}$

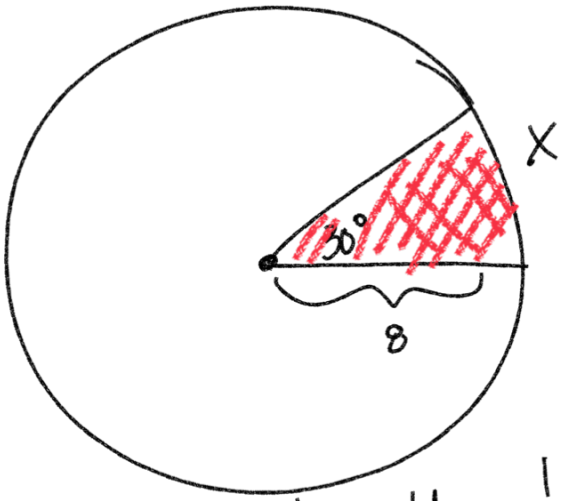
45

$300° * \frac{\pi}{180} = \frac{300\pi}{180} \div 60$

$\boxed{\frac{5\pi}{3}}$

$\frac{7\pi}{6} * \frac{180°}{\pi} = \boxed{210°}$

÷6 ÷6 30



arc length / interior angle / whole angle $= \frac{30°}{360°} = \boxed{\frac{1}{12}}$

Arc Length $\frac{1}{12} = \frac{x}{2\pi r}$

$12x = 2\pi r$

$12x = 2\pi(8)$

$\frac{12x}{12} = \frac{16\pi}{12}$

$\boxed{x = \frac{4\pi}{3}}$

Area $\frac{1}{12} = \frac{a}{\pi r^2}$

$12a = \pi r^2$

$12a = \pi(8)^2$ $a = \frac{64\pi}{12}$

$\frac{12a}{12} = \frac{64\pi}{12}$

$\boxed{a = \frac{16\pi}{3}}$

$\sin\theta = \frac{b}{c}$

$\cos\theta = \frac{a}{c}$

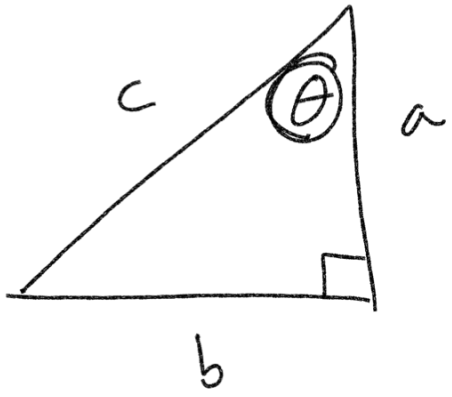
$\tan\theta = \frac{b}{a}$

$\csc\theta = \frac{c}{b}$

$\sec\theta = \frac{c}{a}$

$\cot\theta = \frac{a}{b}$

SOH CAH TOA



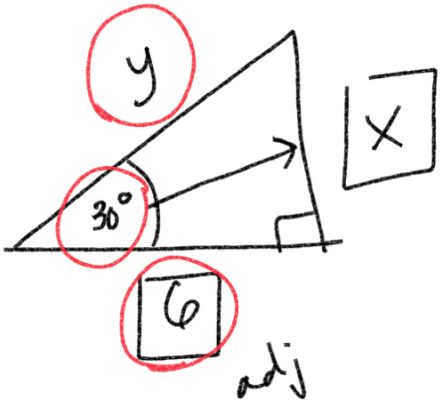
$\sin\theta = \frac{opp}{hyp}$ $\cos\theta = \frac{adj}{hyp}$

$\tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{opp}{adj}$

$\csc\theta = \frac{1}{\sin\theta} = \frac{hyp}{opp}$

$\sec\theta = \frac{1}{\cos\theta} = \frac{hyp}{adj}$

$\cot\theta = \frac{1}{\tan\theta} = \frac{adj}{opp}$



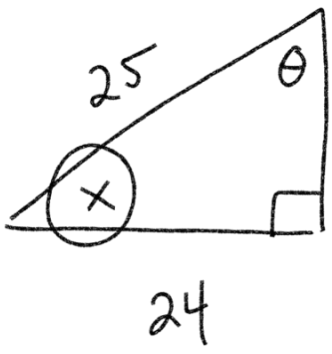
$6(\tan 30^\circ) = \left(\frac{X}{6}\right)6$

$X = 6\tan 30^\circ$

$\boxed{X = 3.5}$

$\cos 30^\circ = \frac{6}{y}$

$y = \frac{6}{\cos 30^\circ} = \boxed{6.9}$



θ

$\sin\theta = \frac{24}{25}$ $\left[\frac{24}{25} = 0.96\right]$

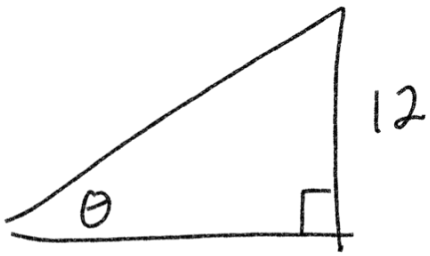
$\sin\theta = \frac{24}{25}$

$\sin^{-1}\left(\frac{24}{25}\right) = \theta = 73.7°$

$\cos X = \frac{24}{25}$

$X = \cos^{-1}\left(\frac{24}{25}\right) = 16.3$ $\{\cos 16.3 = 0.96\}$

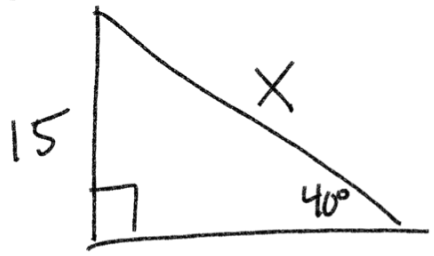
1.)



$\tan\theta = \frac{12}{16}$ $\theta = \tan^{-1}\left(\frac{12}{16}\right)$

$\theta = 36.9°$

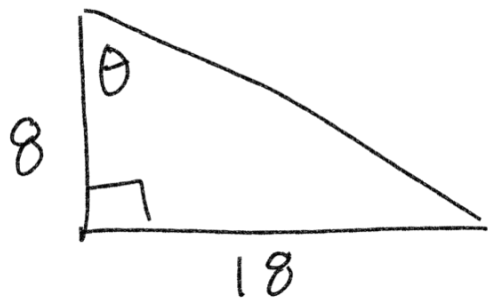
2.



$\sin 40° = \frac{15}{X}$

$X = \frac{15}{\sin 40°} = 23.3$

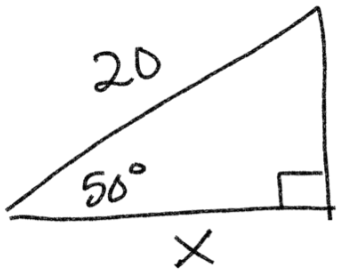
3.)



$\tan\theta = \frac{18}{8}$

$\theta = \tan^{-1}\left(\frac{18}{8}\right) = 66°$

4.)



$20(\cos 50°) = \left(\frac{X}{20}\right)20$

$X = 20\cos 50° = 12.9$