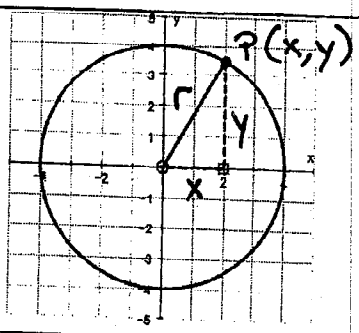
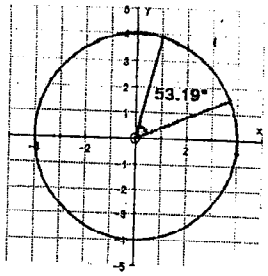
The BIG Trig Sheet

Circle Geometry



1. $\sin(\theta) = \frac{y}{r}$
2. $\cos(\theta) = \frac{x}{r}$
3. $\tan(\theta) = \frac{y}{x}$

Arc Length//Sector Area



1. $s = r\theta$
2. $A = \frac{1}{2}r^2\theta$

Special Angle Chart

Radians	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
Degrees	0°	30°	45°	60°	90°
$Sin\theta$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$ or $\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
$Cos\theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$ or $\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
$Tan\theta$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	$+\infty$

Co-Function Identities for Quadrant I and II

1. $\sin(\theta) = \cos\left(\frac{\pi}{2} - \theta\right)$
2. $\cos(\theta) = \sin\left(\frac{\pi}{2} - \theta\right)$
3. $\tan(\theta) = \cot\left(\frac{\pi}{2} - \theta\right)$
4. $\csc(\theta) = \sec\left(\frac{\pi}{2} - \theta\right)$
5. $\sec(\theta) = \csc\left(\frac{\pi}{2} - \theta\right)$
6. $\cot(\theta) = \tan\left(\frac{\pi}{2} - \theta\right)$
7. $\sin\left(\frac{\pi}{2} + \theta\right) = \cos(\theta)$
8. $\cos\left(\frac{\pi}{2} + \theta\right) = -\sin(\theta)$
9. $\tan\left(\frac{\pi}{2} + \theta\right) = -\cot(\theta)$
10. $\csc\left(\frac{\pi}{2} + \theta\right) = \sec(\theta)$
11. $\sec\left(\frac{\pi}{2} + \theta\right) = -\csc(\theta)$
12. $\cot\left(\frac{\pi}{2} + \theta\right) = -\tan(\theta)$

Compound Angle Formulas

1. $\sin(x + y) = \sin(x)\cos(y) + \sin(y)\cos(x)$
2. $\sin(x - y) = \sin(x)\cos(y) - \sin(y)\cos(x)$
3. $\cos(x + y) = \cos(x)\cos(y) - \sin(x)\sin(y)$
4. $\cos(x - y) = \cos(x)\cos(y) + \sin(x)\sin(y)$

Symmetry Formulas

1. $\sin(-x) = -\sin(x)$
2. $\cos(-x) = \cos(x)$
3. $\tan(-x) = -\tan(x)$

Double Angle Formulas

1. $\sin(2x) = 2\sin(x)\cos(x)$
2. $\cos(2x) = \cos^2(x) - \sin^2(x)$
3. $\cos(2x) = 1 - 2\sin^2(x)$
4. $\cos(2x) = 2\cos^2(\theta) - 1$

Pythagorean Identities

1. $\sin^2(\theta) + \cos^2(\theta) = 1$
2. $1 + \cot^2(\theta) = \csc^2(\theta)$
3. $\tan^2(\theta) + 1 = \sec^2(\theta)$