Trigonometry.

https://harryzaims.com/ Notes and videos for ALL your homework.

Click Me!

Tests are *also* on WebAssign, and the questions come from the same bank as the homework questions.

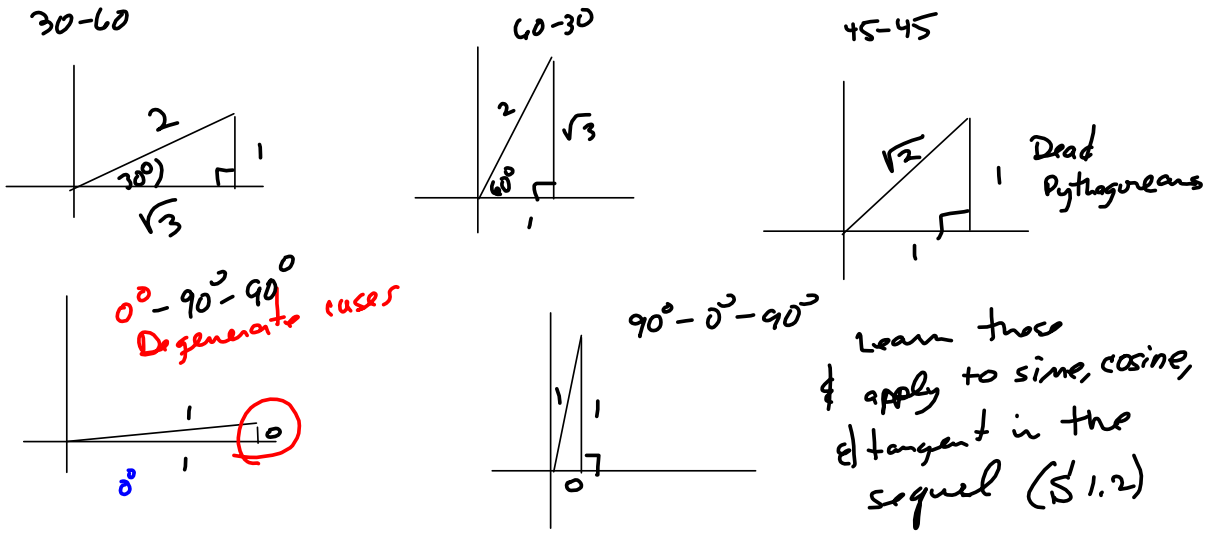
Be honest. Common sense and common courtesy.

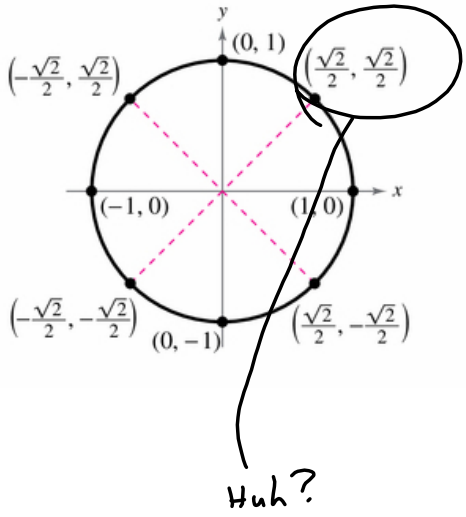
We're going to do 1.1 and 1.2 in sequence. I hate 1.2.

Don't memorize the dad-gum 12-point unit circle if you haven't, already.

Learn 5 triangles:

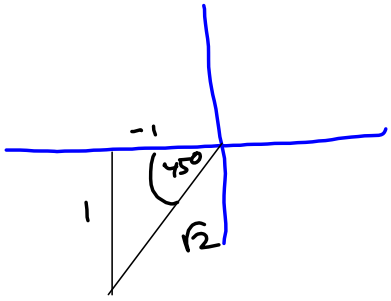
30-60-90
60-30-90
45-45-90
0-90-90 } Degenerate
90-0-90 }



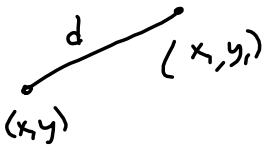


Huh?

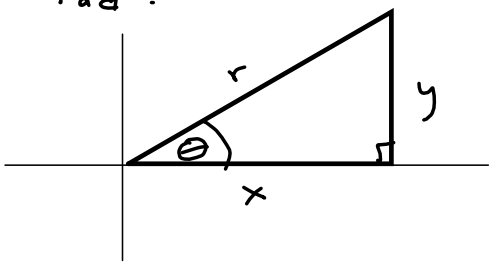
Draw me the triangle for 225°



Distance: $d = \sqrt{(x-x_1)^2 + (y-y_1)^2}$

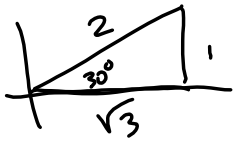


Fact:

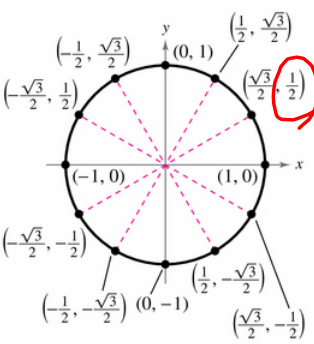


$r^2 = x^2 + y^2$

sine of theta = $\sin(\theta) = \frac{y}{r} = \frac{\text{opposite}}{\text{Hypotenuse}}$

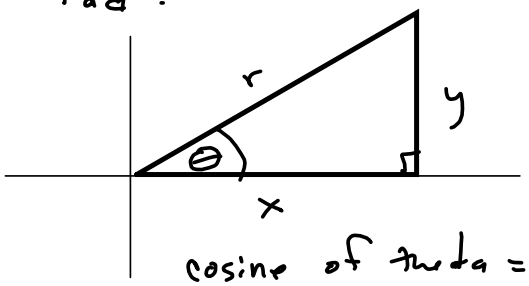
$\sin(30°)$ 

$\Rightarrow \sin(30°) = \frac{1}{2}$



Note:
$\sin(30°)$ = y-coordinate of the point on the unit circle corresponding to 30°.

Fact:



$r^2 = x^2 + y^2$

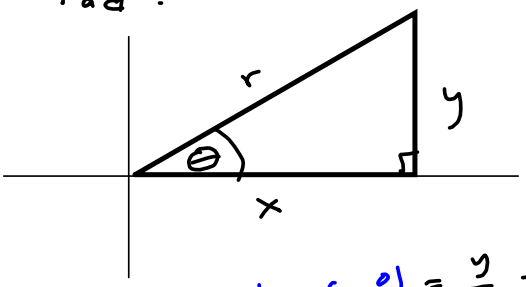
Always include the argument

cosine of theta = $\cos(\theta)$

$= \frac{x}{r} = \frac{\text{adjacent}}{\text{hypotenuse}}$

$\cos(30^\circ) = \frac{\sqrt{3}}{2}$

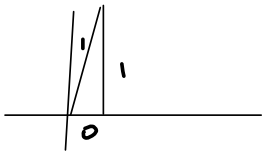
Fact:



tangent of θ is $\tan(\theta)$

$= \frac{y}{x} = \frac{\text{opposite}}{\text{adjacent}}$

$\tan(90^\circ) = \frac{y}{x} = \frac{1}{0}$ DNE, undefined, ∄



Special 3-4-5

(About 57°)

1.1

360° is 2π Radians

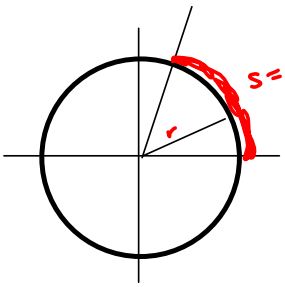
Circumference is $2\pi r$

All the way around the circle

Arc length of $\frac{1}{2}$-circle?

$\frac{1}{2}(2\pi r) = \pi r = \theta r$

$\frac{1}{4}$-circle? $\frac{1}{2}\pi r = \frac{1}{2}\theta r$



360°	2π	Full
180°	π	HALF
90°	$\frac{\pi}{2}$	Quarter

$s = r\theta$

Do same for area of sector

πr^2 = Area of whole thing

$= \frac{1}{2}(2\pi)r^2$

$= \frac{1}{2}\theta r^2$

$= \frac{1}{2}r^2\theta$