

Worksheet for Week 1 - Precalc

Instructions. DISCUSS with your group mates, and do the problems below. You are not expected to finish all the problems. So take your time. :)

1. Some of these algebraic manipulations are correct, and others are incorrect. (Note that a correct answer might be obtained by using incorrect reasoning.) Identify the correct ones and fix the incorrect ones:

(a) $\frac{(x+y)^2}{y} \neq \frac{x^2+y^2}{y} = x^2+y$.

$(x+y)^2 = x^2 + 2xy + y^2$

(b) $\frac{5}{\sqrt{x+5}-\sqrt{x}} = \frac{5(\sqrt{x+5}+\sqrt{x})}{(\sqrt{x+5}-\sqrt{x})(\sqrt{x+5}+\sqrt{x})} = \frac{5(\sqrt{x+5}+\sqrt{x})}{5} = \sqrt{x+5}+\sqrt{x}$. ✓

★ Rationalize

(c) $\frac{x^2-1}{x+1} \neq \frac{x^2}{x} - \frac{1}{1} = x-1$.

(d) $\frac{x^{-1}+y^{-1}}{x^{-1}-y^{-1}} \neq \frac{(x+y)^{-1}}{(x-y)^{-1}} = \frac{x+y}{x-y}$.

$x^{-1}+y^{-1} = \frac{1}{x} + \frac{1}{y} = \frac{y+x}{xy} \neq (x+y)^{-1}$.

(e) $(-3)^2 \neq -3^2 = -9$.

$(-3)^2 = 3^2 = 9$

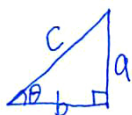
2. Find an equation describing the line passing through (7,0) and (6,2).

slope = $\frac{0-2}{7-6} = -2$

line: $y-0 = -2(x-7)$

$y = -2x + 14$

3. Brain Storm! Write down at least three trig identities or definitions. The more the better!



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

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

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

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

$\sin^2 \theta + \cos^2 \theta = 1$

We'll learn in the future:

$\sin 2\theta = 2 \cos \theta \sin \theta$

$\cos 2\theta = \cos^2 \theta - \sin^2 \theta = 2 \cos^2 \theta - 1 = 1 - 2 \sin^2 \theta$

$\sin^2 \theta = \frac{1 - \cos(2\theta)}{2}$

$\cos^2 \theta = \frac{1 + \cos(2\theta)}{2}$

what you should know by now!

... And more! :)