

8.3 Review
8.4 Test Day 1
8.5 Test Day 2
9-1

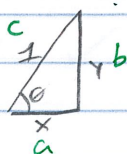
Trig Identities.

Reciprocal Identities

$$\csc \theta = \frac{1}{\sin \theta} \quad \sec \theta = \frac{1}{\cos \theta} \quad \cot \theta = \frac{1}{\tan \theta}$$

$$\sin \theta = \frac{1}{\csc \theta} \quad \cos \theta = \frac{1}{\sec \theta} \quad \tan \theta = \frac{1}{\cot \theta}$$

Pythagorean Identities



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

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

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

$$2) \sec^2 \theta = 1 + \tan^2 \theta$$

$$\sec^2 \theta - 1 = \tan^2 \theta$$

$$3) \csc^2 \theta = 1 + \cot^2 \theta$$

$$\csc^2 \theta - \cot^2 \theta = 1$$

Quotient Identities

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

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

Ex 1: Show $\cos x \tan x = \sin x$

$$\frac{\cos x}{1} \cdot \frac{\sin x}{\cos x} = \sin x$$

$$\sin x = \sin x \quad \checkmark$$

Ex 2: Show $\csc \theta \tan \theta = \sec \theta$

$$\frac{1}{\sin \theta} \cdot \frac{\sin \theta}{\cos \theta} = \sec \theta$$

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

$$\sec \theta = \sec \theta \quad \checkmark$$

Show your steps!
It's not my job to interpret what you might have done. It's your job to explain it clearly!

Like $6x^2 - 5x - 21 = 0$ turns into $(2x+3)(3x-7) = 0$,
it's patience, guess & check.

(cont)

Ex 3: Show $\frac{\sin^2 \theta}{\sin^2 \theta} \cdot \frac{1}{\cos \theta} \cdot \frac{1}{\sin \theta} = \tan \theta$

$$\frac{\sin^2 \theta}{\sin^2 \theta} \cdot \frac{1}{\cos \theta} \cdot \frac{1}{\sin \theta} = \tan \theta$$

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

$$\tan \theta = \tan \theta \quad \checkmark$$

Ex 4: $(1 + \sin x)(1 - \sin x) = \cos^2 x$

$$1 - \sin x + \sin x - \sin^2 x = \cos^2 x$$

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

$$\cos^2 x = \cos^2 x \quad \checkmark$$

Ex 5: $\sin \theta - \cos^2 \theta \sin \theta = \sin^3 \theta$

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

$$\sin \theta (\sin^2 \theta) = \sin^3 \theta$$

$$\sin^3 \theta = \sin^3 \theta \quad \checkmark$$

Ex 6: $\sin x + \cot x \cos x = \csc x$

$$\sin x + \left(\frac{\cos x}{\sin x}\right) \left(\frac{\cos x}{1}\right) = \csc x$$

$$\frac{\sin x}{1} + \frac{\cos^2 x}{\sin x} = \csc x$$

$$\frac{\sin^2 x}{\sin x} + \frac{\cos^2 x}{\sin x} = \csc x$$

$$\frac{\sin^2 x + \cos^2 x}{\sin x} = \csc x$$

$$\frac{1}{\sin x} = \csc x$$

$$\csc x = \csc x \quad \checkmark$$

CW/HW - Whisk