

#### **Fundamental Identities**

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#### **Pythagorean Identities**

 $\cos^{2} \theta + \sin^{2} \theta = 1$  $1 + \tan^{2} \theta = \sec^{2} \theta$  $\cot^{2} \theta + 1 = \csc^{2} \theta$ 



#### **Cofunction Identities**

$$\sin\left(\frac{\pi}{2} - \theta\right) = \cos\theta \qquad \cos\left(\frac{\pi}{2} - \theta\right) = \sin\theta$$
$$\tan\left(\frac{\pi}{2} - \theta\right) = \cot\theta \qquad \cot\left(\frac{\pi}{2} - \theta\right) = \tan\theta$$
$$\sec\left(\frac{\pi}{2} - \theta\right) = \csc\theta \qquad \csc\left(\frac{\pi}{2} - \theta\right) = \sec\theta$$

#### **Even-Odd Identities**

 $\sin(-x) = -\sin x$  $\csc(-x) = -\csc x$ 

cos(-x) = cos x tan(-x) = -tan xsec(-x) = sec x cot(-x) = -cot x

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### EX: Simplifying by Factoring and Using Identities

Simplify the expression  $\cos^3 x + \cos x \sin^2 x$ .

## EX: Simplifying by Factoring and Using Identities

Factor  $\csc^2 x - \cot x - 3$ 

## EX: Simplifying by Expanding and Using Identities

Simplify the expression: 
$$\frac{(\csc x - 1)(\csc x + 1)}{\cos^2 x}$$

## EX: Simplifying by Adding and Using Identities

$$\frac{\sin\Theta}{1+\cos\Theta} + \frac{\cos\Theta}{\sin\Theta}$$

### Class/Homework: pg. 451(1-50)

# Turn in all odd problems before you leave today!

## Evens are due at the beginning of class tomorrow!

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