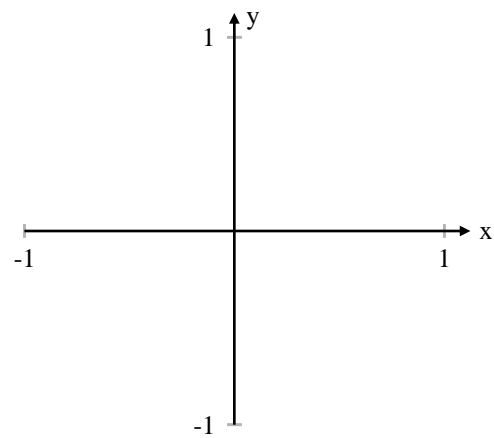
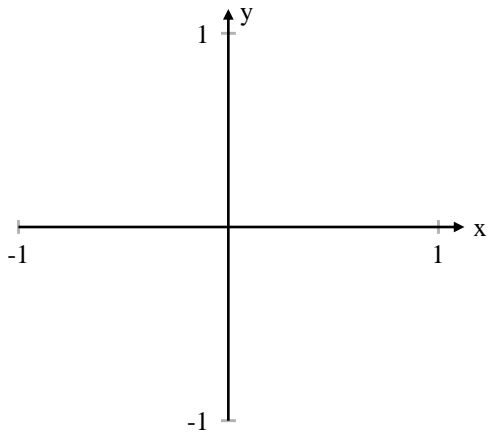


# Sum and Difference Identities

2-20-08

## Difference of Cosines



## Sum of Cosines

## Difference of Sines

# Sum and Difference Identities

2-20-08

Sum of Sines

Difference or Sum of Tangents

1. Use a sum or difference identity to find an exact value.

$$\cos 15^\circ$$

$$\tan 75^\circ$$

## Sum and Difference Identities

2-20-08

2. Write the expression as the sine, cosine, or tangent of an angle.

$$\sin 94^\circ \cos 18^\circ - \cos 94^\circ \sin 18^\circ$$

$$\frac{\tan\left(\frac{\pi}{5}\right) - \tan\left(\frac{\pi}{3}\right)}{1 + \tan\left(\frac{\pi}{5}\right)\tan\left(\frac{\pi}{3}\right)}$$

3. Prove the identity.

$$\tan\left(x - \frac{\pi}{2}\right) = -\cot x$$

## Sum and Difference Identities

2-20-08

4. Prove the identity.

$$\tan\left(x - \frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}(\cos x + \sin x)$$

5. Prove the reduction formula.

$$\sec\left(\frac{\pi}{2} - u\right) = \csc u$$

## Sum and Difference Identities

2-20-08

6. Express the function as a sinusoid in the form  $y = a \sin(bx + c)$ .

$$y = 5 \sin x - 12 \cos x$$

7. Prove the identity.

$$\cos(x - y) + \cos(x + y) = 2 \cos x \cos y$$

## Sum and Difference Identities

2-20-08

8. Prove the identity.

$$\sin 4x + \sin 2x = 2 \sin 3x \cos x$$