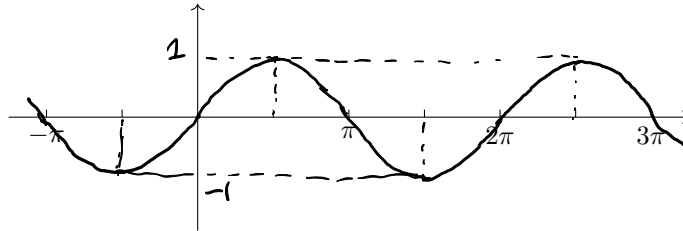


MATH 2A/5A Prep: Trigonometric Functions

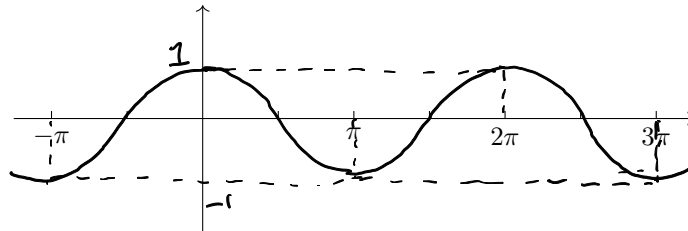
Facts to Know:

1. Graph of trigonometric functions:

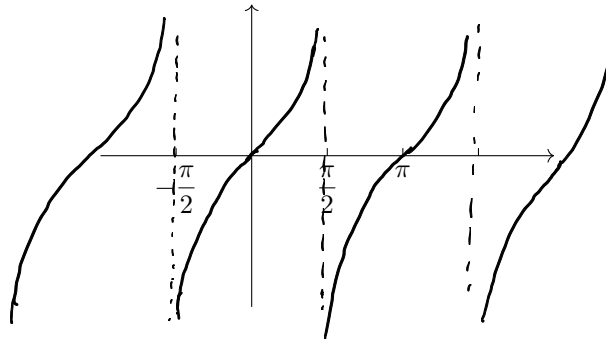
$$y = \sin(x):$$



$$y = \cos(x):$$



$$y = \tan(x):$$



2. Trigonometric identities:

$$\bullet \sin^2(x) + \cos^2(x) = 1$$

$$\bullet \tan^2(x) + 1 = \sec^2(x)$$

$$\bullet \cot^2(x) + 1 = \csc^2(x)$$

$$\bullet \sin(2x) = 2\sin(x)\cos(x)$$

$$\bullet \cos(2x) = 2\cos^2(x) - 1 = 1 - 2\sin^2(x)$$

$$\rightarrow \sin^2 x = \sin^2(x) = [\sin(x)]^2$$

$$\sin(x^2) = \sin x^2$$

Examples:

1. Write $\sin^2(x)$ in terms of $\cos(2x)$.

2. Prove the identities $\tan^2(x) + 1 = \sec^2(x)$ and $\cot^2(x) + 1 = \csc^2(x)$.

3. Find the intervals that describe the solution to $\sin(x) > 0$.

