

5 Study Guide 1.notebook

Review Topics

- 5.1 - Simplifying Trig Expression
- Pythagorean Identities
 - $\sin^2 x + \cos^2 x = 1$
 - $\sec^2 x = \tan^2 x + 1$
 - $1 + \cot^2 x = \csc^2 x$
 - reciprocal identities $\frac{1}{\cos x} = \sec x$ $\frac{1}{\sec x} = \cos x$ etc
 - quotient identities $\tan x = \frac{\sin x}{\cos x}$ $\cot x = \frac{\cos x}{\sin x}$
- 5.2 Verifying Trig Equations
- get one side to look like the other
 - used simplifying strategies from 5.1
 - using a conjugate
- 5.3 Solving Trig Equations
- factor
 - simplify first using identity substitutions
 - solved over domains of $[0, 2\pi)$ or $(-\infty, \infty)$
 - multiangle problems ($\sin 3x$, etc) $+2k\pi$ or $+k\pi$ or $+\frac{k\pi}{2}$
- $\frac{1}{3}(3x = \underline{\hspace{1cm}} + 2\pi \quad \underline{\hspace{1cm}} + 2\pi)$ 3 sets of answers
get x alone
- 5.4 - Sum/difference formulas
- given angle \rightarrow expand to find ratio
 - given ratio \rightarrow draw Δ and use the ratios to find a ratio answer (we don't know the angle)
 - used to verify
 - condensed to a single trig function
 - solve
- 5.5 Double Angles & Power Reducing
- solve
 - to find ratios
- $\left. \begin{array}{l} \text{- solve} \\ \text{- to find ratios} \end{array} \right\} \text{- to reduce an expression to powers of one}$

Formulas

- Pythagorean Identities (see above)
- Sum/difference $\sin(u \pm v) = \sin u \cos v \pm \cos u \sin v$
 $\cos(u \pm v) = \cos u \cos v \mp \sin u \sin v$
- double angle $\sin 2x = 2 \sin x \cos x$
 $\cos 2x = \cos^2 x - \sin^2 x$
 $= 2\cos^2 x - 1$
 $= 1 - 2\sin^2 x$
- power reducing $\sin^2 x = \frac{1 - \cos 2x}{2}$
 $\cos^2 x = \frac{1 + \cos 2x}{2}$
 $\tan^2 x = \frac{1 - \cos 2x}{1 + \cos 2x}$