Trig 5.2 day 2 Warm-Up Name: Key

Verify each identity. Be sure to show each step AND write down your "reasons."

1. $\dfrac{\cos^2 x}{1-\sin(-x)} = 1 - \sin x$

(L)

1. $\dfrac{1-\sin^2 x}{1+\sin x}$ — 1. Pyth. Id / Neg ∠ Id.
2. $\dfrac{(1-\sin x)(1+\sin x)}{1+\sin x}$ — 2. Factor DOTS
3. $1-\sin x = 1-\sin x$ — 3. Cancell common factors.

2. $\dfrac{\sin x}{1-\cos x} = \csc x + \cot x$

1. $\dfrac{\sin x(1+\cos x)}{(1-\cos x)(1+\cos x)}$ — 1. Multiply by 1
2. $\dfrac{\sin x(1+\cos x)}{1-\cos^2 x}$ — 2. Multiply
3. $\dfrac{\sin x(1+\cos x)}{\sin^2 x}$ — 3. Pythag Id
4. $\dfrac{1+\cos x}{\sin x}$ — 4. Cancell common factor
5. $\dfrac{1}{\sin x} + \dfrac{\cos x}{\sin x}$ — 5. Separate fractions
6. $\csc x + \cot x = \csc x + \cot x$ — 6. Rec ID & Quot ID

3. $\dfrac{1-\cos^4 x}{\sin^2 x} = 1 + \cos^2 x$

1. $\dfrac{(1-\cos^2 x)(1+\cos^2 x)}{(1-\cos^2 x)}$ — 1. Factor DOTS / Pyth Id
2. $1+\cos^2 x = 1+\cos^2 x$ — 2. cancell common factor

4. $\cos x \csc(-x) \tan x = -1$

1. $\dfrac{\cos x}{1} \cdot \dfrac{-\csc x}{1} \cdot \dfrac{\sin x}{\cos x}$ — 1. Neg ∠ ID / Quot ID
2. $\dfrac{1}{-\sin x} \cdot \dfrac{\sin x}{1}$ — 2. Rec ID / Cancell common factors
3. $-1 = -1$ — 3. Multiply Simplify

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5. $\frac{1}{1-\sin x} + \frac{1}{1+\sin x} = 2\sec^2 x$

1. $\frac{1+\sin x + 1-\sin x}{(1-\sin x)(1+\sin x)}$ — 1. Add fractions by LCD.

2. $\frac{2}{1-\sin^2 x}$ — 2. Simplify/multiply.

3. $\frac{2}{\cos^2 x}$ — 3. Pyth. ID

4. $2\sec^2 x = 2\sec^2 x$ — 4. Rec ID.

6. $\sec^2 x + \tan^2 x \sec^2 x = \sec^4 x$

1. $\sec^2 x(1+\tan^2 x)$ — 1. GCF factor

2. $\sec^2 x(\sec^2 x)$ — 2. Pythag Id

3. $\sec^4 x = \sec^4 x$ — 3. Multiply