GPS PreCalculus: Unit 4: Trig Identities **Name** _____
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Given that α and β **are in quadrant 4 and** $\sin\alpha = -\frac{4}{5}$ and $\cos\beta = \frac{15}{17}$**, find:**

1. $\cos(\alpha)$

2. $\sin(\beta)$

3. $\sin(\alpha + \beta)$

4. $\cos(\alpha - \beta)$

5. $\tan(2\beta)$

Verify the following.

4. $\cos^2 x(1+\tan^2 x) = 1$

5. $1+\sec^2\theta\sin^2\theta = \sec^2\theta$

6. $\frac{1}{1-\cos x} - \frac{1}{1+\cos x} = 2\csc x\cot x$

7. $\frac{\sin x}{\sin x - \cos x} = \frac{1}{1-\cot x}$

Use sum/difference formulas to find the exact value of the following:

1. $\sin 60° = \sin(90° - 30°)$

2. $\cos 75° = \cos(120° - 45°)$

Write as the sin, cos, or tan of a single angle.

1. $\sin 70°\cos 40° - \cos 70°\sin 40°$

2. $\cos 210°\cos 80° + \sin 210°\sin 80°$

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Solve.

1. $2\sin^2 x = 2 + \cos x$

2. $2\sin\alpha\cos\alpha = \sin\alpha$

3. $\sin^2 x - 3\cos x = 3$

4. $2\sin^2 x = 9\sin x + 5$

5. $3\tan(\theta + 35) = \sqrt{3}$

6. $\sin^2\beta - \sin\beta = 0$