

**Part I: Use a sum or difference identity to find an exact value for:**

1)  $\sin 105^\circ$

2)  $\cos 195^\circ$

3)  $\tan(-15^\circ)$

**Part II: Prove each of the following:**

1)  $\sin(x - \pi) = -\sin x$

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

3)  $\tan\left(x + \frac{\pi}{4}\right) = \frac{1 + \tan x}{1 - \tan x}$

4)  $\cos 2x = 1 - 2\sin^2 x$

**Part III: Using your double-angle identities, fill in the missing information.**

1)  $\cos 350^\circ = 1 - 2$  \_\_\_\_\_

2)  $\sin(10x) = 2$  \_\_\_\_\_

3)  $\cos(14x) =$  \_\_\_\_\_  $-\sin^2 7x$

4)  $\tan 250^\circ =$  \_\_\_\_\_

**Part IV: Find all solutions to each equation in the interval  $[0, 2\pi)$**

1)  $\cos 2x = \cos x$

2)  $\sin 2x = 2\sin x$

3)  $\cot x - \sin 2x = 0$