Name: _____

Solving Trigonometric Equations

Exercise 1: Solve the multiply-angle equation.

1) $\cos 2x = \frac{1}{2}$

2) $\sin 2x = -\frac{\sqrt{3}}{2}$

3) $\tan 3x = 1$

4) $\sec 4x = 2$

5) $\cos\frac{x}{2} = \frac{\sqrt{2}}{2}$

6) $\sin\frac{x}{2} = -\frac{\sqrt{3}}{2}$

Exercise 2: Find the x-intercepts of the graph.

1) $y = \sin\frac{\pi x}{2} + 1$

2) $y = \tan\left(\frac{\pi}{4}x - \frac{\pi}{6}\right)$

3) $y = \sin \pi x + \cos \pi x$

4) $y = \tan^2\left(\frac{\pi x}{6}\right) - 3$

5) $y = \sec^4\left(\frac{\pi x}{8}\right) - 4$

Exercise 3: Find the solutions (to three decimal places) of the equation in the interval $(0,2\pi)$.

1) $2\sin x + \cos x = o$

2) $4\sin^3 x + 2\sin^2 x - 2\sin x - 1 = 0$

3) $\frac{1+\sin x}{\cos x} + \frac{\cos x}{1+\sin x} = 4$

4) $\frac{\cos x \cot x}{1-\sin x} = 3$

5) $\tan x - 1 = 0$

6) $\sec^2 x + 0.5\tan x - 1 = 0$

7) $\csc^2 x + 0.5\cot x - 5 = 0$

8) $2\tan^2 x + 7\tan x - 15 = 0$

9) $6\sin^2 x - 7\sin x + 2 = 0$

10) $\cos x - 1 = 0$