Assignments for the Week of Oct. 3

- Read 6.6, 7.1
- 45 minutes of Khan Academy
- Textbook assignment due Friday 10/14:

  6.5 #25-55 odd Inverse Trig Functions
  6.6 #1-21 odd Solving Trig Equations
  #61-83 odd

- Upcoming:
- 7.1 Law of Sines
- 7.2 Law of Cosines

$x \in [0, 2\pi)$

$$\tan(5x) = 0$$

$5x = 0, \pi; 2\pi, 3\pi; 4\pi, 5\pi; 6\pi, 7\pi; 8\pi, 9\pi$

$x = 0, \frac{\pi}{5}, \frac{2\pi}{5}, \frac{3\pi}{5}, \frac{4\pi}{5}, \pi, \frac{6\pi}{5}, \frac{7\pi}{5}, \frac{8\pi}{5}, \frac{9\pi}{5}$

$x \in [0, 2\pi)$

72. $\cos 2x = 2\cos x - 1$

$\cos 2x - 2\cos x + 1 = 0$

$2\cos^2 x - 1 - 2\cos x + 1 = 0$

$2\cos^2 x - 2\cos x = 0$

$2\cos x(\cos x - 1) = 0$

$2\cos x = 0 \qquad \cos x - 1 = 0$

$\cos x = 0 \qquad \cos x = 1$

$x = \frac{\pi}{2}, \frac{3\pi}{2} \qquad x = 0$

$x \in [0, 2\pi)$

74. $\sin 4x - \cos 2x = 0$

$\sin 2(2x)$

$2\sin 2x\cos 2x - \cos 2x = 0$

$\cos 2x(2\sin 2x - 1) = 0$

$\cos 2x = 0 \quad , \quad 2\sin 2x - 1 = 0$

$2x = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \frac{7\pi}{2} \qquad \sin 2x = \frac{1}{2}$

$x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4} \qquad 2x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{13\pi}{6}, \frac{17\pi}{6}$

$x = \frac{\pi}{12}, \frac{5\pi}{12}, \frac{13\pi}{12}, \frac{17\pi}{12}$

78. $\cos 2x \cos x - \sin 2x \sin x = 0$

$\cos(2x+x) = 0$

$\cos 3x = 0$

$3x = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \frac{7\pi}{2}, \frac{9\pi}{2}, \frac{11\pi}{2}$

$x = \frac{\pi}{6}, \frac{\pi}{2}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}$

$x \in [0, 2\pi)$

82. $\cos 3x + \cos x = 0$

$\cos(2x+x) + \cos x = 0$

$\cos 2x \cos x - \sin 2x \sin x + \cos x = 0$

$(2\cos^2 x - 1)\cos x - (2 \sin x \cos x)\sin x + \cos x = 0$

$2\cos^3 x - \cos x - 2\sin^2 x \cos x + \cos x = 0$

$2\cos^3 x - 2\sin^2 x \cos x = 0$

$2\cos x(\cos^2 x - \sin^2 x) = 0$

$2\cos x(\cos 2x) = 0$

$2\cos x = 0$ $\quad$ $\cos 2x = 0$

$\cos x = 0$ $\quad$ $2x = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \frac{7\pi}{2}$

$x = \frac{\pi}{2}, \frac{3\pi}{2}$ $\quad$ $x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

$x \in [0, 2\pi)$

84. $2\sin x \cos x - 2\sqrt{2}\sin x - \sqrt{3}\cos x + \sqrt{6} = 0$

$2\sin x(\cos x - \sqrt{2}) - \sqrt{3}(\cos x - \sqrt{2}) = 0$

$(\cos x - \sqrt{2})(2\sin x - \sqrt{3}) = 0$

$\cos x - \sqrt{2} = 0$ N/A

$\cos x = \sqrt{2}$

$2\sin x - \sqrt{3} = 0$

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

$x = \pi/3, 2\pi/3$

$x \in [0, 2\pi)$

76. $\tan\frac{x}{2} = 1 - \cos x$

$\tan\frac{x}{2} = \frac{\sin x}{1+\cos x}$

$\frac{1-\cos x}{\sin x} = 1 - \cos x$ V. $\frac{\sin x}{1+\cos x} = 1 - \cos x$

$= \frac{1-\cos x}{\sin x}$

$\frac{1-\cos x}{\sin x} - (1-\cos x) = 0$

$(1-\cos x)\left(\frac{1}{\sin x} - 1\right) = 0$

$\cos x = 1$

$x = 0$

$\frac{1}{\sin x} = 1$

$1 = \sin x$

$x = \frac{\pi}{2}$

$\sin x = (1-\cos x)(1+\cos x)$

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

$\sin x = \sin^2 x$

$0 = \sin^2 x - \sin x$

$0 = \sin x(\sin x - 1)$

$\sin x = 0 \; ; \; \sin x - 1 = 0$

$\sin x = 1$

$x = 0, \pi \; ; \; x = \frac{\pi}{2}$