King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math 002 - Term 151
Recitation (7.6 and 7.7)

Question 1: Solve the following equations

a) $\sin\dfrac{x}{2} + \cos x = 1$, for $0 \le x \le \pi$.

b) $\sin 2x + \sin x - 2\cos x - 1 = 0$, where $0 \le x < 2\pi$

c) $\tan\dfrac{x}{2} = 1 - \cos x$, where $0 \le x < 2\pi$.

Answer: **(a):** $SS = \left\{0, \dfrac{\pi}{3}\right\}$ **(b):** $SS = \left\{\dfrac{\pi}{2}, \dfrac{2\pi}{3}, \dfrac{4\pi}{3}\right\}$ **(c):** $SS = \left\{0, \dfrac{\pi}{2}\right\}$

Question 2: Solve the equations: $\arcsin 2x + \arccos x = \dfrac{\pi}{2}$

Answer: $SS = \{0\}$

Question 3

The sum of all solutions of the equation $-2\cos 2x \sin 3x + 2\cos 3x \sin 2x = \sqrt{3}$ in the interval $[-\pi, \pi]$ is:

A) $-\dfrac{4\pi}{3}$ B) $-\dfrac{2\pi}{3}$ C) $\dfrac{\pi}{3}$

D) $-\pi$ E) $\dfrac{2\pi}{3}$

Question 4: If $\cos^{-1} x - \tan^{-1}\sqrt{3} = \sin^{-1}\dfrac{1}{3}$, then $x =$

A) $\dfrac{2\sqrt{2} + \sqrt{3}}{6}$ B) $\dfrac{2\sqrt{2} + 1}{6}$ C) $\dfrac{4 + \sqrt{2}}{6}$

D) $\dfrac{2\sqrt{2} - 1}{6}$ E) $\dfrac{2\sqrt{2} - \sqrt{3}}{6}$