29. $\cos x \sin x - \sin x = 0 \quad \Leftrightarrow \quad \sin x\,(\cos x - 1) = 0 \quad \Leftrightarrow \quad \sin x = 0$ or $\cos x = 1 \quad \Leftrightarrow$ $x = 0, \pi$ or $x = 0$. Therefore, the solutions are $x = 0$ and $\pi$.

31. $2\sin^2 x - 5\sin x + 2 = 0 \quad \Leftrightarrow \quad (2\sin x - 1)(\sin x - 2) = 0 \quad \Leftrightarrow \quad \sin x = \frac{1}{2}$ or $\sin x = 2$ (which is inadmissible) $\quad \Leftrightarrow \quad x = \frac{\pi}{6}, \frac{5\pi}{6}$. Thus, the solutions in $[0, 2\pi)$ are $x = \frac{\pi}{6}$ and $\frac{5\pi}{6}$.

33. $2\cos^2 x - 7\cos x + 3 = 0 \quad \Leftrightarrow \quad (2\cos x - 1)(\cos x - 3) = 0 \quad \Leftrightarrow \quad \cos x = \frac{1}{2}$ or $\cos x = 3$ (which is inadmissible) $\quad \Leftrightarrow \quad x = \frac{\pi}{3}, \frac{5\pi}{3}$. Therefore, the solutions in $[0, 2\pi)$ are $x = \frac{\pi}{3}, \frac{5\pi}{3}$.

35. Note: $x = \pi$ is not a solution because then the denominator is zero. $\dfrac{1 - \cos x}{1 + \cos x} = 3 \quad \Leftrightarrow$ $1 - \cos x = 3 + 3\cos x \quad \Leftrightarrow \quad -4\cos x = 2 \quad \Leftrightarrow \quad \cos x = -\frac{1}{2} \quad \Leftrightarrow \quad x = \frac{2\pi}{3}, \frac{4\pi}{3}$ in $[0, 2\pi)$.

37. (factor by grouping) $\tan^3 x + \tan^2 x - 3\tan x - 3 = 0 \quad \Leftrightarrow \quad (\tan x + 1)(\tan^2 x - 3) = 0 \quad \Leftrightarrow$ $\tan x = -1$ or $\tan x = \pm\sqrt{3} \quad \Leftrightarrow \quad x = \frac{3\pi}{4}, \frac{7\pi}{4}$ or $x = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$. Therefore, the solutions in $[0, 2\pi)$ are $x = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{3\pi}{4}, \frac{4\pi}{3}, \frac{5\pi}{3}, \frac{7\pi}{4}$.

39. $\tan \frac{1}{2}x + 2\sin 2x = \csc x \quad \Leftrightarrow \quad \dfrac{1 - \cos x}{\sin x} + 4\sin x\cos x = \dfrac{1}{\sin x} \quad \Leftrightarrow$ $1 - \cos x + 4\sin^2 x\cos x = 1 \quad \Leftrightarrow \quad 4\sin^2 x\cos x - \cos x = 0 \quad \Leftrightarrow \quad \cos x\,(4\sin^2 x - 1) = 0$ $\Leftrightarrow \quad \cos x = 0$ or $\sin x = \pm\frac{1}{2} \quad \Leftrightarrow \quad x = \frac{\pi}{2}, \frac{3\pi}{2}$ or $x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$. Thus, the solutions in $[0, 2\pi)$ are $x = \frac{\pi}{6}, \frac{\pi}{2}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}$.

41. $\tan x + \sec x = \sqrt{3} \quad \Leftrightarrow \quad \dfrac{\sin x}{\cos x} + \dfrac{1}{\cos x} = \sqrt{3} \quad \Leftrightarrow \quad \sin x + 1 = \sqrt{3}\cos x \quad \Leftrightarrow$ $\sqrt{3}\cos x - \sin x = 1 \quad \Leftrightarrow \quad \frac{\sqrt{3}}{2}\cos x - \frac{1}{2}\sin x = \frac{1}{2} \quad \Leftrightarrow \quad \cos\frac{\pi}{6}\cos x - \sin\frac{\pi}{6}\sin x = \frac{1}{2} \quad \Leftrightarrow$ $\cos(x + \frac{\pi}{6}) = \frac{1}{2} \quad \Leftrightarrow \quad x + \frac{\pi}{6} = \frac{\pi}{3}, \frac{5\pi}{3} \quad \Leftrightarrow \quad x = \frac{\pi}{6}, \frac{3\pi}{2}$. However $x = \frac{3\pi}{2}$ is inadmissible because $\sec\frac{3\pi}{2}$ is undefined. Thus, the only solution is in $[0, 2\pi)$ is $x = \frac{\pi}{6}$.