Math 165 Practice Test #3

① Simplify: $\tan\theta \sin\theta + \cos\theta$

② Simplify: $\dfrac{\cos\theta}{1+\sin\theta} + \dfrac{\sin\theta}{\cos\theta}$

③ Prove: $\dfrac{\csc^2\theta - \cot^2\theta}{\sin^2\theta} = \csc^2\theta$

④ Prove: $\sec x - \tan x \sin x = \cos x$

⑤ Prove: $\cos^2\theta - \sin^2\theta = 1 - 2\sin^2\theta$

⑥ Find the exact value of each:

a) $\sin 105^\circ =$

b) $\cos\left(\frac{\pi}{12}\right) =$

* For all equations give all solutions on the interval $[0, 2\pi)$

⑦ $\sin x + \sqrt{2} = -\sin x$

⑧ $2\sin^2 x + 2\sin x + 3 = 3\sin x + 4$

⑨ $2\cos 3t - 1 = 0$

⑩ $\sec^2 x - 2\tan x = 4$