5.10 Solving Trig Equations (with factoring)   Name: _____

Solve each equation on the indicated domain, show all of your work!

1. $2\sin\theta\cos\theta = \sqrt{2}\cos\theta$

   $\theta \in \{\text{real number degrees}\}$

   $90 + 360n$
   $270 + 360n$
   $45 + 360n$
   $135 + 360n$

2. $\tan x \sec x = \tan x$ $x \in \{\text{real numbers}\}$

   πn

3. $2\sin^2 x + \sin x = 0$ $x \in (-\pi, \pi)$

   $0, -\frac{\pi}{6}, -\frac{5\pi}{6}$

4. $2\cos^2 x - 5\cos x + 2 = 0$ $x \in [0, 2\pi)$

   $\frac{\pi}{3}, \frac{5\pi}{3}$

5. $2\sec^2 x - 3\sec x - 2 = 0$ $x \in [0, 2\pi)$

   $\frac{\pi}{3}, \frac{5\pi}{3}$

6. $\sin^2 x + 5\sin x + 6 = 0$ $x \in [0, 2\pi)$

   NO SOLUTION

7. $\tan^2 x - \sec x - 1 = 0$ $x \in [-\pi, \pi)$

   $-\pi, \frac{\pi}{3}, \frac{-\pi}{3}$

8. $\tan^2 x + \tan x = 0$ $x \in (-\pi, \pi)$

   $0, -\frac{\pi}{4}, \frac{3\pi}{4}$

9. $4\csc^2 x + 4\csc x + 1 = 0$ $x \in [0, 2\pi)$

   NO SOLUTION

10. $3 - 3\sin x - 2\cos^2 x = 0$ $x \in [-\pi, \pi]$

    $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{\pi}{2}$

11. $\sin 2x + \sqrt{3}\sin x = 0$ $x \in [0, 2\pi)$

    $0, \frac{5\pi}{6}, \frac{7\pi}{6}, \pi$

⭐ 12. $4\sin^2 x + 7\sin x = 2$ $x \in [0, 2\pi)$

   $\sin^{-1}\left(\frac{1}{4}\right) = x$
   would need a calculator