Math 1410: Worksheet 9

October 22, 2021

Name: _____

1. For these questions, you're asked to translate from angles to slopes. For all of these, please leave your answer in exact form rather than give a decimal approximation.

   (a) Find an equation for the line which passes through the origin at an angle of $\pi/6$ above the positive x-axis.

   (b) Find an equation for the line with the same slope as in (a), but passes through the point $(1, 2)$ instead of the origin.

   (c) Find an equation for the line which intersects the line from (a) at an angle of $\pi/4$ (measuring clockwise from the (a) line to this line) and passes through the point $(0, 2)$.

2. Simplify the following trigonometric expression as much as possible. Show all your work.

$$\frac{\cos\theta}{\tan\theta} + \frac{1 - \cos^2\theta}{1 - \sin^2\theta} + \frac{\sin\theta\csc\theta}{1 + \cot^2\theta} - \frac{\tan\theta\csc\theta}{\cos\theta}$$