

Homework 1

Due January 10, 2017

1. Determine the exact value of each of the following using the trigonometric identities.

(a) (3 points) $\cos(-\pi/12)$

(b) (3 points) $\tan(\pi/8)$

2. Calculate the following limits or state that they do not exist.

(a) (4 points) $\lim_{x \rightarrow 0} \frac{\tan x}{x}$

(b) (6 points) $\lim_{x \rightarrow 0} \frac{\sin(4x)}{x}$

(c) (6 points) $\lim_{x \rightarrow 1} [(1-x) \cdot \csc(1-x^2)]$

(d) (4 points) $\lim_{x \rightarrow 0} \frac{1 - \cos x}{\tan x}$

(e) (6 points) $\lim_{x \rightarrow 3} \frac{1 - \cos^2(3x)}{x}$

3. (8 points) Determine the area of the shaded region.

