

## Quiz 7 on PreCalculus II (Math 1151)

Mark your Recitation Session Number: 015 023 025

Name: \_\_\_\_\_ Student ID: \_\_\_\_\_ Score: \_\_\_\_\_

You must show all your work. Correct answer without any step earns zero point.  
You **cannot** use calculators in this quiz.

1. (5 points.) Find the exact value of the expression:

$$\tan 40^\circ - \frac{\cos 50^\circ}{\cos 40^\circ}.$$

**Solution:**

$$\begin{aligned}\tan 40^\circ - \frac{\cos 50^\circ}{\cos 40^\circ} &= \tan 40^\circ - \frac{\sin 40^\circ}{\cos 40^\circ} \\ &= \tan 40^\circ - \tan 40^\circ \\ &= 0\end{aligned}$$

2. (5 points.) Solve the triangle:

$$\alpha = 30^\circ, \beta = 45^\circ, a = 2.$$

**Solution:** first find out  $\gamma$ :

$$\gamma = 180^\circ - \alpha - \beta = 180^\circ - 30^\circ - 45^\circ = 105^\circ,$$

Then use Law of sines:

$$\begin{aligned}b &= \frac{a \sin \beta}{\sin \alpha} = \frac{2 \sin 45^\circ}{\sin 30^\circ} = \frac{2 \frac{\sqrt{2}}{2}}{\frac{1}{2}} = 2\sqrt{2}, \\ c &= \frac{a \sin \gamma}{\sin \alpha} = \frac{2 \sin 105^\circ}{\sin 30^\circ} = \frac{2 \frac{\sqrt{6} + \sqrt{2}}{4}}{\frac{1}{2}} = \sqrt{6} + \sqrt{2}.\end{aligned}$$