

Quiz 7 - Math 112, Sections 20-22

Calculators are **not** allowed for this exam. Please mark your final answers clearly. Give exact answers.

1. Evaluate the following.

(a) $\cos\left(\frac{\pi}{3}\right) = \frac{1}{2}$

(b) $\tan\left(\frac{7\pi}{6}\right) = \frac{1}{\sqrt{3}}$

(c) $\csc\left(\frac{3\pi}{4}\right) = \frac{2}{\sqrt{2}}$

(d) $\sin\left(\frac{\pi}{2}\right) = 1$

(e) $\sec(5\pi) = -1$

(f) $\cot\left(\frac{11\pi}{6}\right) = -\sqrt{3}$

2. Find the area of an equilateral triangle with side length 10.

3. Given the following information, sketch the triangle and solve the triangle. Be clear.

$$\angle A = 64^\circ, \angle B = 33^\circ, b = 20$$

Solution for Problem 2. In an equilateral triangle, all sides have the same length (in this case, 10) and all angles are the same (60 degrees). Hence, by the formula for the area of a triangle,

$$\text{Area} = \frac{1}{2}(10)(10) \sin 60 = 25\sqrt{3}$$

Solution for Problem 3. We have two angles, so we can find the third:

$$\angle C = 180 - \angle A - \angle B = 180 - 64 - 33 = 83$$

To find a , we use the Law of Sines:

$$\frac{\sin A}{a} = \frac{\sin B}{20}$$

so

$$\frac{\sin 64}{a} = \frac{\sin 33}{20}$$

and we get

$$a = \frac{20 \sin 64}{\sin 33}$$

We do the same exact thing to get c :

$$c = \frac{20 \sin 83}{\sin 33}$$