

Trigonometry
Unit 4 Review

Name Key

Date _____

No Notes! No Calculator!

Leave all answers in simplest radical form.

1. Find the exact value of $\sin 45^\circ$.

$$\frac{\sqrt{2}}{2}$$

2. Find the exact value of $\sec \frac{2\pi}{3}$

$$-2$$

3. Find the exact value of $\cos 510^\circ$

$$\frac{1}{2}$$

4. Find the exact value of $\cot \frac{5\pi}{4}$

$$1$$

5. Find the exact value of $\tan (-270^\circ)$

$$\text{Undef}$$

6. Find the exact value of $\csc 660^\circ$

$$\frac{-2\sqrt{3}}{3}$$

7. Find the exact value of $\sec \left(\frac{11\pi}{6} \right)$

$$\frac{2\sqrt{3}}{3}$$

8. Find the exact value of $\cot (-405^\circ)$

$$-1$$

9. Find the exact value of $\cos 600^\circ$

$$-\frac{1}{2}$$

10. Find the exact value of $\tan 5\pi$

$$0$$

1. Find two angles in radians that are coterminal with $\frac{4\pi}{3}$. $\pm 2\pi$

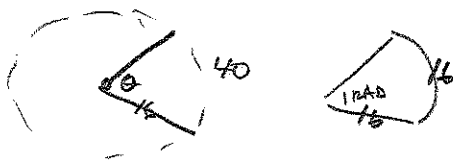
ex: $-\frac{2\pi}{3}, \frac{10\pi}{3}, \frac{16\pi}{3}$

2. How many radians does the second hand of a clock sweep through in 12 minutes?

$$2\pi \cdot 12 = 24\pi$$

3. A circle has a radius length of 16 ft. A sector is carved out of the circle that has an arc length of 40 ft.

- a. Find the measure of the central angle of the sector in radians.



$$\frac{\theta}{1} = \frac{40}{16} = 2.5 \text{ radians}$$

or

- b. Find the area of the sector.

$$A = \frac{\theta \cdot r^2}{2} = \frac{2.5 \cdot 16^2}{2} = 320 \text{ ft}^2$$

$$S = \theta \cdot r$$

$$40 = \theta \cdot 16$$

$$\theta = 2.5 \text{ radians}$$

4. Find the area of the following triangles.

- a. $C = 72^\circ, a = 10, b = 12$

$$A = \frac{1}{2} ab \sin C = \frac{1}{2} (10)(12) \sin 72^\circ$$

$$57.1 \text{ u}^2$$

- b. $a = 7, b = 10, c = 13$

$$s = \frac{7+10+13}{2} = 15$$

$$A = \sqrt{15(8)(5)(2)} \approx 34.6 \text{ u}^2$$

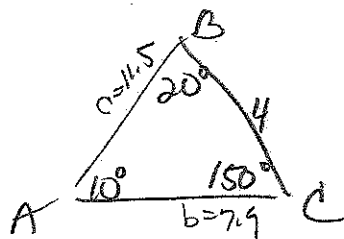
5. A triangular plot of land measures 250 yards by 375 yards by 305 yards. What is the area of the plot of land? Round to the nearest square yard.

$$s = \frac{250+375+305}{2} = 465$$

$$A = \sqrt{465(465-250)(465-375)(465-305)} \approx 37,943 \text{ yd}^2$$

6. Solve the following triangles.

a. $A = 10^\circ, B = 20^\circ, a = 4$



$$\frac{\sin 10}{4} = \frac{\sin 20}{b}$$

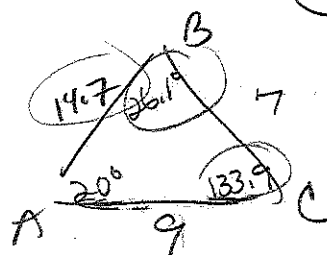
$$b = 7.9$$

$$\frac{\sin 10}{4} = \frac{\sin 150}{c}$$

$$c = 11.5$$

b. $a = 7, b = 9, A = 20^\circ$

ASS!



$$\frac{\sin 20}{7} = \frac{\sin B}{9}$$

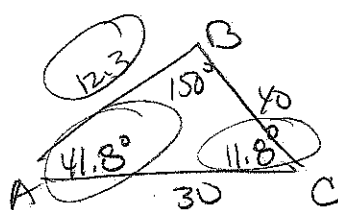
$$\sin B = .44$$

$$B = 26.1^\circ \text{ or } 153.9^\circ$$

$$C = 133.9^\circ \text{ or } 6.1^\circ$$

c. $a = 40, b = 30, B = 150^\circ$

ASS!



$$\frac{\sin 150}{30} = \frac{\sin A}{40}$$

$$\sin A = .67$$

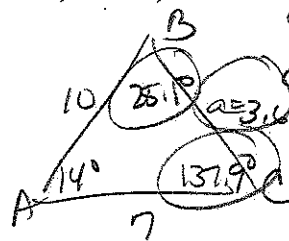
$$A = 41.8^\circ \text{ or } 138.2^\circ$$

d. $b = 7, c = 10, A = 14^\circ$

$$a^2 = 7^2 + 10^2 - 2 \cdot 7 \cdot 10 \cos 14^\circ$$

$$a^2 = 13.2$$

$$a = 3.6$$



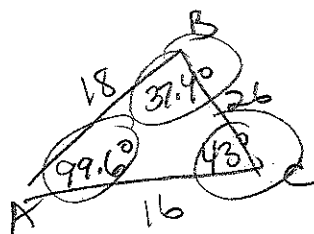
$$\frac{\sin 14}{3.6} = \frac{\sin B}{7}$$

$$\sin B = .47$$

$$B = 28.1^\circ$$

$$C = 137.9^\circ$$

e. $a = 26, b = 16, c = 18$



$$26^2 = 16^2 + 18^2 - 2 \cdot 16 \cdot 18 \cos A$$

$$\cos A = -.17$$

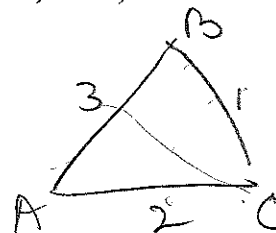
$$A = 99.6^\circ$$

$$\frac{\sin 99.6}{26} = \frac{\sin B}{16}$$

$$\sin B = .61$$

$$B = 37.4^\circ$$

f. $a = 1, b = 2, c = 3$



$$3^2 = 1^2 + 2^2 - 2 \cdot 1 \cdot 2 \cos C$$

$$\cos C = -1$$

$$C = 180^\circ$$

NB!

Unit 4 HW

HW 1: The Law of Sines Handout

HW 2: Ambiguous Case Law of Sines Handout

HW 3: Practice Law of Sines and Law of Cosines Handout

HW 4: Law of Sines and Law of Cosines and Area of a Triangle Handout

HW 5: Law of Sine and Cosine Word Problems Handout

HW 6: Oblique Triangle Application Problems