

Math 124 – Trigonometry

Exam 4: Ch 7; 2.5; 8.1, 8.2

The Rules:

1. You are required to access your exam through your Discussion Board group;
2. You are on your honor to do your own work (alone) on this exam;
3. Formulas are provided on the last page; no other resources are allowed;
4. Show all work for partial credit consideration (no credit earned if you do not justify your answers clearly);
5. Any work demonstrating methods and/or techniques deemed more advanced than as presented in class will result in no credit for that Q (this has occurred, particularly on the Boards);
6. You may use a calculator;
7. All answers must be exact unless specifically requested for rounding;
8. Any and all suspicious activity will be submitted to the powers-that-be for potential academic dishonesty;
9. Printing of this exam is not required; however, if you do not print, you must number clearly and keep things organized;
10. All final answers must be recorded on the provided lines;
11. Once complete, you must upload this as ONE doc (multiple pages) into the current module (but NOT into the Discussion Board where you downloaded it);

Math 124 – Trigonometry
Exam 4
(McKeague 8th Ed. – Chapter 7 & 2.5. 8.1. 8.2)

Name _____

Form B

- 1. (8 points)** Find all the missing parts of triangle ABC if
 $B = 88^\circ$, $C = 27^\circ$, and $b = 24$ feet.
Round to the nearest tenth of a foot and use correct units in your
final answers. Then find the area of triangle ABC .

1. _____

Area: _____

- 2. (2 points)** Draw vector $U = \langle 5, -7 \rangle$. Then write U in vector component form
in terms of the unit vectors $\mathbf{i}$ and $\mathbf{j}$.

2. _____



- 3. (3 points)** Find the magnitude of the horizontal and vertical components for
the vector V , given that $|V| = 15$ and $\theta = 223^\circ$. Round to one decimal
place.

3. $|V_x| =$ _____

$|V_y| =$ _____

- 4. (10 points)** Find all possible solutions for triangle ABC if
 $A = 43^\circ, a = 7 \text{ in}, b = 9 \text{ in}.$
Round to the nearest tenth and use correct units in your final answers.

4. _____

- 5. (8 points)** Suppose triangle ABC has sides lengths $a = 6, b = 11,$ and $c = 12.$

- a.** Find the area using Heron's formula. Round your final answer to one decimal place.
b. Find the measure of each angle in triangle ABC . Round each angle to the nearest tenth of a degree.

5.
Area: _____

6. Consider the vectors:

$$U = \langle -6, -8 \rangle, V = \langle 2, 5 \rangle, W = -i + 9j, \text{ and } X = 4i - 3j$$

a. (2 points) Find $X \cdot V$.

6. a. _____

b. (2 points) Find $U - X$.

b. _____

c. (3 points) Find $3W - 2V$.

c. _____

d. (4 points) Find angle θ between vectors V and X . Round to the nearest tenth of a degree.

d. _____

e. (2 points) Are any of these vectors perpendicular? If so, state which pair(s) are perpendicular and explain your reasoning.

e. _____

7. (2 points each) Consider the complex numbers $z_1 = 4 - 6i$ and $z_2 = -3 + 4i$.

a. $z_1 - z_2$

7a. _____

b. $\frac{z_2}{z_1}$

b. _____

c. Convert z_1 into its equivalent trigonometric form. You may use "r cis θ " form.

c. _____

Law of Sines	Law of Cosines	
Or... $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$ $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$	$a^2 = b^2 + c^2 - 2bc \cdot \cos A$ $b^2 = a^2 + c^2 - 2ac \cdot \cos B$ $c^2 = a^2 + b^2 - 2ab \cdot \cos C$	$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$ $\cos B = \frac{a^2 + c^2 - b^2}{2ac}$ $\cos C = \frac{a^2 + b^2 - c^2}{2ab}$
Area Formulas		
$S = \frac{1}{2}bc \cdot \sin A$ $S = \frac{1}{2}ac \cdot \sin B$ $S = \frac{1}{2}ab \cdot \sin C$ $S = \sqrt{s(s-a)(s-b)(s-c)}$ Where $s = \frac{a+b+c}{2}$		
$U \cdot V = U V \cos \theta$ $\cos \theta = \frac{U \cdot V}{ U V }$		
$r = \sqrt{x^2 + y^2}$ $\tan \theta = \frac{y}{x}$		