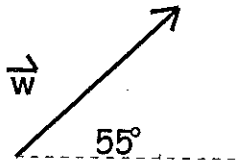
Name_____
Date _____ Period _____

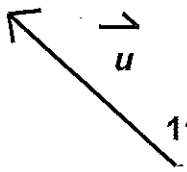
Advanced Precalculus
Review over 6.3

Round all answers to the hundredth place when needed.

Given:



$\|\vec{w}\| = 12\text{cm}$



$\|\vec{u}\| = 5\text{cm}$

1. Give the component form for $\vec{w}$ $\langle 12\cos 55^\circ, 12\sin 55^\circ \rangle = \langle 6.88, 9.83 \rangle$

2. Give the component form for $\vec{u}$ $\langle 5\cos 115^\circ, 5\sin 115^\circ \rangle = \langle -2.11, 4.53 \rangle$

Find the magnitude and direction of each resultant below: (Round answers to the nearest hundredth of a degree)

3. $\vec{u}+\vec{w}$ $x = 12\cos 55^\circ + 5\cos 115^\circ = 4.77$
$y = 12\sin 55^\circ + 5\sin 115^\circ = 14.36$
$\|\vec{u}+\vec{w}\| = \sqrt{x^2+y^2}$
$\theta = \tan^{-1}(y/x)$

$\|\vec{u}+\vec{w}\| = 15.13\text{ cm}$
$\theta = 71.63^\circ$

4. $\vec{w}-\vec{u}$
$x = 12\cos 55^\circ - 5\cos 115^\circ = 8.996$
$y = 12\sin 55^\circ - 5\sin 115^\circ = 5.298$
$\|\vec{w}-\vec{u}\| = \sqrt{x^2+y^2}$
$\theta = \tan^{-1}(y/x)$

$\|\vec{w}-\vec{u}\| = 10.44\text{cm}$
$\theta = 30.50^\circ$

5. $2\vec{w}+\vec{u}$
$x = 24\cos 55^\circ + 5\cos 115^\circ = 11.65$
$y = 24\sin 55^\circ + 5\sin 115^\circ = 24.19$
$\|2\vec{w}+\vec{u}\| = \sqrt{x^2+y^2}$ $\theta = \tan^{-1}(y/x)$

$\|2\vec{w}+\vec{u}\| = 26.85\text{cm}$
$\theta = 64.28^\circ$

Find the component form of **v** given its magnitude and the angle it makes with the positive x-axis.

6. $\|v\| = 4\sqrt{3}$ $\theta = 150^\circ$ $\langle 4\sqrt{3}\cos 150^\circ, 4\sqrt{3}\sin 150^\circ \rangle = \langle -6, 3.46 \rangle$

7. $\|v\| = 9$ $\theta = 220^\circ$ $\langle 9\cos 220^\circ, 9\sin 220^\circ \rangle = \langle -6.89, -5.79 \rangle$

Find the magnitude of each, if $\vec{a}=\langle -2,0\rangle$, $\vec{b}=\langle 1,-4\rangle$, $\vec{c}=\langle -1,2\rangle$, *and* $\vec{d}=\langle 2,-5\rangle$:

$\|\langle -2,4\rangle\|$

8. $\|2\vec{c}\| =$ $\sqrt{20}=2\sqrt{5}$

$\sqrt{2^2+4^2}=\sqrt{20}$

$\|\langle 1,-3\rangle\|$

9. $\|\vec{c}+\vec{d}\| =$ $\sqrt{10}$

$\sqrt{1^2+3^2}=\sqrt{10}$

10. $\|\vec{a}-\vec{b}\| =$ 5

$\|\langle -3,4\rangle\|=\sqrt{3^2+4^2}=\sqrt{25}$

11. $\|3\vec{a}+2\vec{b}\| =$ $\sqrt{80}=4\sqrt{5}$

$\|\langle -4,-8\rangle\|=\sqrt{4^2+8^2}=\sqrt{80}$

The initial point and terminal point are given. Find the component form and the magnitude of the vector.

		initial point	terminal point
$\langle 14,-4\rangle$	$\sqrt{212}=2\sqrt{53}$ 12.	(-9, 3)	(5,-1)
$\langle -9,27\rangle$	$\sqrt{810}=9\sqrt{10}$ 13.	(2, -6)	(-7, 21)
$\langle 13,-11\rangle$	$\sqrt{290}$ 14.	(-7, -2)	(6,-13)

15. Given the points A (-1,5), B (2, -6), C (4, -3), D (-1, -8), find each of the following.

a) component form of $\overrightarrow{AB}=\langle 3,-11\rangle$

b) component form of $\overrightarrow{CD}=\langle -5,-5\rangle$

c) $\|\overrightarrow{AB}\| =$ $\sqrt{130}$

d) $\|\overrightarrow{CD}\| =$ $\sqrt{50}=5\sqrt{2}$

e) component form of $\overrightarrow{BC}=\langle 2,3\rangle$

d) component form of $\overrightarrow{CA}=\langle -5,8\rangle$

16. An airplane flies 375 km on a course of 240° from point A to point B. At point B the pilot then changes the course to 310°. The plane then flies 125 km to point C. Find the net displacement and the plane's direction from A to C to the nearest hundredth.

$\overrightarrow{AB}=\langle 375\cos 240^\circ, 375\sin 240^\circ\rangle$

$\overrightarrow{BC}=\langle 125\cos 310^\circ, 125\sin 310^\circ\rangle$

$\overrightarrow{AB}+\overrightarrow{BC}=\langle \underset{x}{-107.15}, \underset{y}{-420.52}\rangle$

$\sqrt{x^2+y^2} =$ 433.95 km

$\tan^{-1}\left(\frac{y}{x}\right)+180=\theta=$ 255.70°

17. Forces of 67 lbs and 54 lbs make an angle of 75° with each other and are applied to an object at the same point. Find the magnitude of the resultant force.

$\vec{v}=\langle 67\cos 0^\circ, 67\sin 0^\circ\rangle$

$\vec{w}=\langle 54\cos 75^\circ, 54\sin 75^\circ\rangle$

$\vec{v}+\vec{w}=\langle 80.98, 52.16\rangle$

$\sqrt{x^2+y^2} =$ 96.32 lbs