

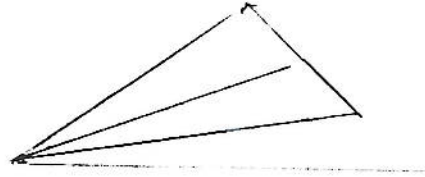
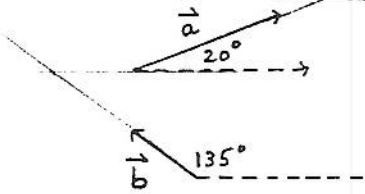
PreCalculus Test
Chapter 8

Review

1. Find the magnitude and amplitude of the resultant vector of $2\vec{a} - \vec{b}$.

magnitude 45 mm

amplitude 9°



2. Find the ordered pair that represents the vector from A to B. Then find the magnitude. A(2, 4) B(-1, 3)

ordered pair $(-3, -1)$

magnitude $\sqrt{10}$

3. Find an ordered pair that represents \vec{u} in each equation if $\vec{v} = (2, -1)$ and $\vec{w} = (-3, 5)$.

a) $\vec{u} = 2\vec{v} + 3\vec{w}$

$\vec{u} = \underline{(-5, 13)}$

b) $\vec{u} = \vec{w} - 2\vec{v}$

$\vec{u} = \underline{(-7, 7)}$

4. Give the magnitude and direction (with respect to the positive x-axis) of $\vec{a}(-4, 6)$.

magnitude $2\sqrt{13}$

direction 123.7°

5. Determine if the vectors are perpendicular. Justify your answer.

a) $\vec{a}(7, -4)$ $\vec{b}(-5, -8)$

dot $\neq 0$

b) $\vec{a}(-3, -6)$ $\vec{b}(-4, 2)$

yes $\neq 0$

6. Fill in the chart.

	amplitude	heading/ bearing	graph	N θ E N θ W	S θ E S θ W	angle of elev/dep	reference angle
a)	120°	330°		N 30° W		60° elev	60°
b)	215°	235°			S 55° W	35° dep	35°

Central \times

7. Find the components of the vector with **heading** of 200° at 17 mph.

x component -5.8

y component -16.0

8. Given the following, determine the appropriate forms.

a) $x = -2 + 4t$ $m = \frac{3}{4}$ $(-2, -1)$
 $y = -1 + 3t$

slope-int $y = \frac{3}{4}x + \frac{11}{4}$ $y + 1 = \frac{3}{4}(x + 2)$

vector $(x + 2, y + 1) = t(4, 3)$

b) $y = 3x + 5$

$x = 0 + 1t$

parametric $y = 5 + 3t$

vector $(x + 0, y - 5) = t(1, 3)$

$(0, 5)$ $m = \frac{3}{1} = 3$

9. An airplane is heading due north at 260 mph. A 20 mph wind blows at a **bearing** of 110° . Find the ground speed and compass direction of the plane. Show all work.

groundspeed 253.9

compass direction N4.2E

10. Gabriella Reese hits a volleyball with an initial velocity of 54 feet per second at an angle of 23° . She makes contact with the ball 6.5 feet off the ground. Write the parametric equations that describe the motion of the ball.

$x = 54t \cos 23$

$y = -16t^2 + 54t \sin 23 + 6.5$

11. Given the following projectile parametric equations, answer the following questions.

$x = 90 T \cos 36$

$y = -16 T^2 + 90 T \sin 36 + 4$

a) After 2 seconds, how far has the ball travelled? 145.6

b) When will the object hit the ground? 4.5 / 2.1 Sec

c) How far has the object gone? 340.5 - 247.6

d) What is the highest altitude of the object? 47.7

PreCalculus Quiz B
8.5

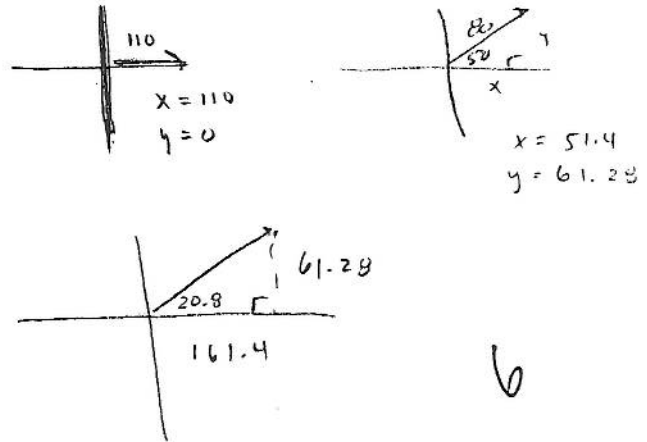
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DIZZE

Solve each word problem. Label answers. Round all answers to the nearest tenth.

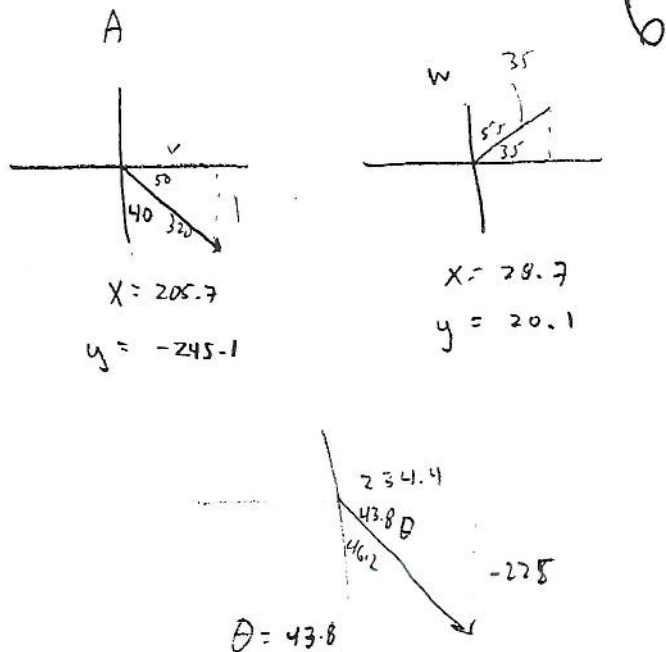
1. One force of 110 Newtons acts on an object. Another force of 80 Newtons acts on the same object at a 50° angle from the first force. Find the magnitude and direction of the resultant force on the object.

magnitude 172.64
direction Amp 20.8
N 69.2 E
bearing 69.2



2. A plane has an airspeed of 320 mph flying in a $S 40^\circ E$ direction. The wind has a velocity of 35 mph and a direction of $N 55^\circ E$. Find the groundspeed and direction of the plane.

groundspeed 324.9
direction bearing 133.8
Amp 316.2
S 46.2 E



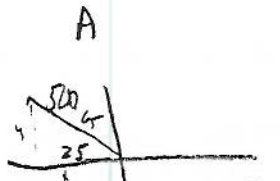
3. A plane is flying at a bearing of 295° at an airspeed of 500 mph. Because of the wind, the plane's groundspeed is 480 mph and is flying in a $N 46^\circ W$ direction. Find the speed and direction of the wind.

speed 162.9

direction Amp 48.6

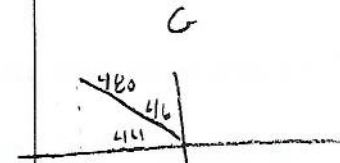
bearing 41.4

$N 41.4 E$



$x = -453.1$
 $y = 211.3$

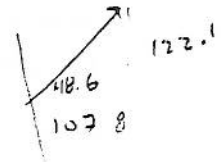
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$x = -345.3$

$y = 373.4$

$x = 107.8$
 $y = 122.1$



Fill in the chart.

Amplitude	Picture	Bearing	N θ E S θ E N θ W S θ W	Angle of Elev./Dep.	Reference Angle
237°		213	S 33° W	57° dep	57°
164		286°	N 74° W	16° elev	16°

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