

Planet Holloway **websheet 3.4**

AP Physics C Chapter 3

You may print this out and write on it or work on your own paper.

Show all work.

Use the following vectors for all problems below:

(Hint: it is more efficient to find the components of the six vectors first and list them beside the main vector for reference during the problems).

$$a = 34 \text{ m/s @ } 55^\circ$$

$$b = 2 \text{ m/s @ } 180^\circ$$

$$c = 16 \text{ m/s @ } 250^\circ$$

$$d = 7 \text{ m/s @ } 335^\circ$$

$$e = 9 \text{ m/s @ } 20^\circ$$

$$f = 24 \text{ m/s @ } 125^\circ$$

1. Find $a + b + c$
2. Find $d + e + f$
3. Find $a + b + c + d + e + f$
4. Find $e - f$
5. Find $4d - 7b$
6. Find $2a - 3c + 4e - 6f$

Answers:

Components:

Vector	x-component	y-component
a	19.5	27.85
b	-2	0
c	-5.47	-15.04
d	6.34	-2.96
e	8.46	3.08
f	-13.77	19.66

1.

a	19.5	27.85
b	-2	0
c	-5.47	-15.04
Resultant r	12.03	12.81

$R = 17.57 @ 46.8^\circ$

2.

d	6.34	-2.96
e	8.46	3.08
f	-13.77	19.66
Resultant r	1.03	19.78

$R = 19.81 @ 87.02^\circ$

3.

a	19.5	27.85
b	-2	0
c	-5.47	-15.04
d	6.34	-2.96
e	8.46	3.08
f	-13.77	19.66
Resultant r	13.06	32.59

$R = 35.12 @ 68.16^\circ$

4.

e	8.46	3.08
-f	13.77	-19.66
Resultant r	22.23	-16.58

$R = 27.73 @ 323.28^\circ$

5.

4d	$4*6.34$	$4*(-2.96)$
-7b	$-7*(-2)$	0
Resultant r	39.36	-11.84

R = 41.1 @ 343.26

6.

2a	$2*19.5$	$2*27.85$
-3c	$-3*(-5.47)$	$-3*(-15.04)$
4e	$4*8.46$	$4*3.08$
-6f	$-6*(-13.77)$	$(-6)*(19.66)$
Resultant r	171.87	-4.82

R = 171.94 @ 358.39°