Name: _____

WORKSHEET

Scalar multiplication

1 Given the position vector $\mathbf{v} = (1, -2)$ draw the following

a $\mathbf{v}$

b $3\mathbf{v}$

c $-\mathbf{v}$

d $0.5\mathbf{v}$

2 Given the position vector $\mathbf{u} = (2, 195°)$ draw the following

a $\mathbf{u}$

b $-\mathbf{u}$

c $2.5\mathbf{u}$

d $-0.8\mathbf{u}$

3 Given $\mathbf{w} = (2, 3)$, label the following on the diagram

a $\mathbf{w}$

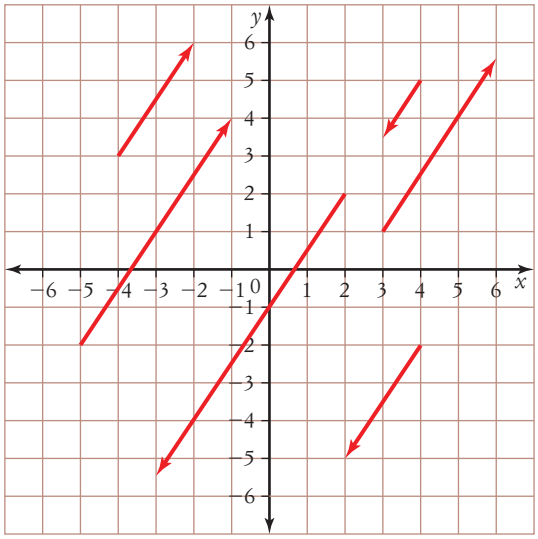
b $-\mathbf{w}$

c $2\mathbf{w}$

d $-0.5\mathbf{w}$

e $1.5\mathbf{w}$

f $-2.5\mathbf{w}$



4 Given $\mathbf{a} = (3, 4)$ find:

a $-\mathbf{a}$

b $5\mathbf{a}$

c $2.5\mathbf{a}$

d $-9\mathbf{a}$

e $\mathbf{a} + 4\mathbf{a}$

f $\mathbf{a} - 6\mathbf{a}$

g $2\mathbf{a} + 5\mathbf{a} - 3\mathbf{a}$

h $\pi\mathbf{a} - \mathbf{a}$

5 Given $\mathbf{b} = (6, 150°)$ find:

a $3\mathbf{b}$

b $1.8\mathbf{b}$

c $21\mathbf{b}$

d $-\mathbf{b}$

e $-4\mathbf{b}$

f $-9.5\mathbf{b}$

g $3\mathbf{b} + 5\mathbf{b}$

h $3\mathbf{b} - 8\mathbf{b}$

6 Given $\mathbf{x} = (5, 2)$, $\mathbf{y} = (-4, 7)$ and $\mathbf{z} = (-3, -6)$ find:

a $\mathbf{x} + \mathbf{y}$

b $\mathbf{y} + \mathbf{z}$

c $2\mathbf{x} + 3\mathbf{y}$

d $5\mathbf{x} - 2\mathbf{y}$

e $-4x + 8z$

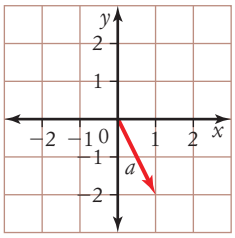
f $-6x - 3y$

g $2x - y + 3z$

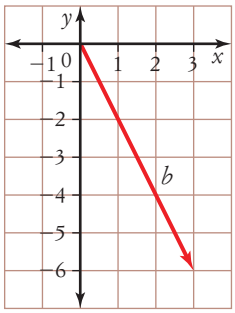
h $-9x + 2y - 10z$

Answers

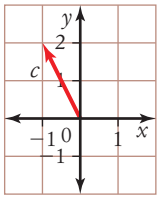
1 a



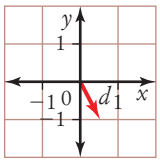
b



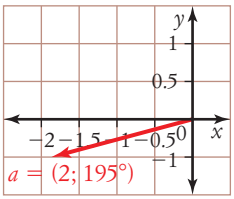
c



d



2 a



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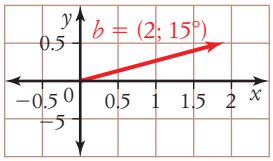

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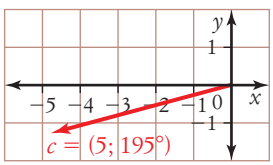
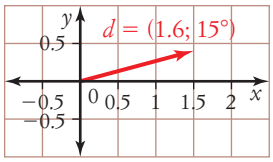
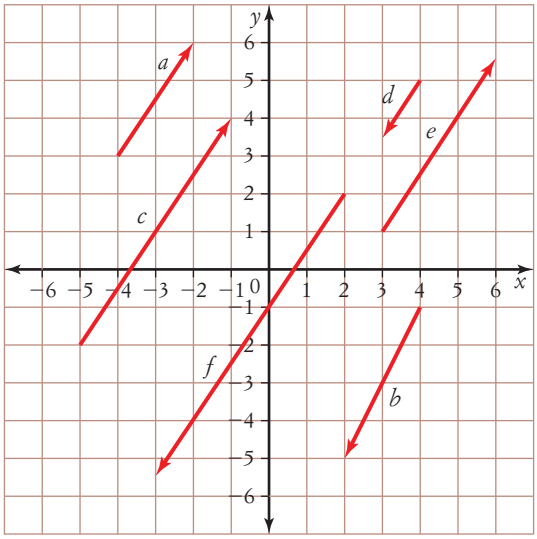


d



3



4 a $(-3, -4)$

b $(15, 20)$

c $(7.5, 10)$

d $(-27, -36)$

e $(15, 20)$

f $(-15, -20)$

g $(12, 16)$

h $(3\pi - 3, 4\pi - 4)$

5 a $(18, 150°)$

b $(10.8, 150°)$

c $(126, 150°)$

d $(6, 330°)$

e $(24, 330°)$

f $(57, 330°)$

g $(48, 150°)$

h $(30, 330°)$

6 a $(1, 9)$

b $(-7, 1)$

c $(-2, 25)$

d $(33, -4)$

e $(-44, -56)$

f $(-18, -33)$

g $(5, -21)$

h $(-23, 56)$