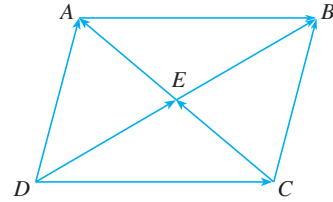


MA 213 Worksheet #2

Section 12.2

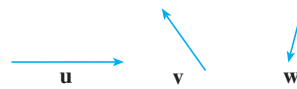
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- 1 12.2.3 Name all the equal vectors in the parallelogram shown.



- 2 12.2.5 Copy the vectors in the figure and use them to draw the following vectors.

a $\mathbf{u} + \mathbf{v}$ **b** $\mathbf{u} + \mathbf{w}$
c $\mathbf{v} + \mathbf{w}$ **d** $\mathbf{u} - \mathbf{w}$
e $\mathbf{v} + \mathbf{u} + \mathbf{w}$ **f** $\mathbf{u} - \mathbf{v} - \mathbf{w}$



- 3 Find a vector \mathbf{a} with representation given by the directed line segment \overrightarrow{AB} . Draw \overrightarrow{AB} and the equivalent representation starting at the origin.

12.2.9 $A(-2, 1), B(1, 2)$

12.2.11 $A(3, -1), B(2, 3)$

12.2.13 $A(0, 3, 1), B(2, 3, -1)$

- 4 Find $\mathbf{a} + \mathbf{b}$, $4\mathbf{a} + 2\mathbf{b}$, $|\mathbf{a}|$ and $|\mathbf{a} - \mathbf{b}|$.

12.2.19 $\mathbf{a} = \langle -3, 4 \rangle, \mathbf{b} = \langle 9, -1 \rangle$

12.2.21 $\mathbf{a} = 4\mathbf{i} - 3\mathbf{j}, \mathbf{b} = 2\mathbf{i} - 4\mathbf{k}$

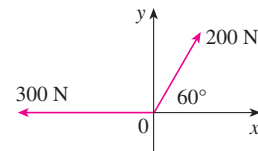
- 5 Find a unit vector that has the same direction as the given vector.

12.2.23 $\langle 6, -2 \rangle$

12.2.25 $8\mathbf{i} - \mathbf{j} + 4\mathbf{k}$

- 6 12.2.29 If \mathbf{v} lies in the first quadrant and makes an angle $\pi/3$ with the positive x -axis and $|\mathbf{v}| = 4$, find \mathbf{v} in component form.

- 7 12.2.33 Find the magnitude of the resultant force and the angle it makes with the positive x -axis.



- 8 12.2.47 If $\mathbf{r} = \langle x, y, z \rangle$ and $\mathbf{r}_0 = \langle x_0, y_0, z_0 \rangle$, describe the set of all points (x, y, z) such that $|\mathbf{r} - \mathbf{r}_0| = 1$.

- 9 12.2.37 A block-and tackle pulley hoist is suspended in a warehouse by ropes of lengths 2 m and 3 m. The hoist weighs 350 N. The ropes, fastened at different heights, make angles of 50° and 38° with the horizontal. Find the tension in each rope and the magnitude of each tension.

