

63. (a) With SI units understood, the net force is

$$\vec{F}_{\text{net}} = \vec{F}_1 + \vec{F}_2 = (3.0 + (-2.0))\hat{i} + (4.0 + (-6.0))\hat{j}$$

which yields  $\vec{F}_{\text{net}} = 1.0\hat{i} - 2.0\hat{j}$  in Newtons.

- (b) Using magnitude-angle notation (especially convenient on a vector-capable calculator), the answer to part (a) becomes

$$\vec{F}_{\text{net}} = (2.2 \text{ N } \angle -63^\circ).$$

- (c) Since  $\vec{F}_{\text{net}}$  is equal to  $\vec{a}$  multiplied by a positive scalar (which cannot affect the direction of the vector it multiplies), then the acceleration has the same angle as the net force. The magnitude of  $\vec{a}$  comes from dividing the magnitude of  $\vec{F}_{\text{net}}$  by the mass ( $m = 1.0 \text{ kg}$ ). Thus, in magnitude-angle notation, the answer is  $\vec{a} = (2.2 \text{ m/s}^2 \angle -63^\circ)$ .