9.2

**17–20 WORK**

Find the work done by a force **p** acting on a body if the body is displaced along the straight segment $AB$ from $A$ to $B$. Sketch $\overrightarrow{AB}$ and **p**. Show the details.

**17.** $\mathbf{p} = [2, 5, 0]$, $A$: $(1, 3, 3)$, $B$: $(3, 5, 5)$

**18.** $\mathbf{p} = [-1, -2, 4]$, $A$: $(0, 0, 0)$, $B$: $(6, 7, 5)$

**19.** $\mathbf{p} = [0, 4, 3]$, $A$: $(4, 5, -1)$, $B$: $(1, 3, 0)$

**20.** $\mathbf{p} = [6, -3, -3]$, $A$: $(1, 5, 2)$, $B$: $(3, 4, 1)$

**21. Resultant.** Is the work done by the resultant of two forces in a displacement the sum of the work done by each of the forces separately? Give proof or counterexample.

force $p = \begin{bmatrix} 2 \\ 5 \\ 0 \end{bmatrix}$

$\overrightarrow{AB} = B - A$

$= \begin{bmatrix} 3 \\ 5 \\ 5 \end{bmatrix} - \begin{bmatrix} 1 \\ 3 \\ 3 \end{bmatrix} = \begin{bmatrix} 2 \\ 2 \\ 2 \end{bmatrix}$

$W = F \cdot d$

$= p \cdot \overrightarrow{AB}$

$= \begin{bmatrix} 2 \\ 5 \\ 0 \end{bmatrix} \cdot \begin{bmatrix} 2 \\ 2 \\ 2 \end{bmatrix} = 2 \cdot 2 + 5 \cdot 2 + 0 \cdot 2$

$= 4 + 10 + 0 = 14$