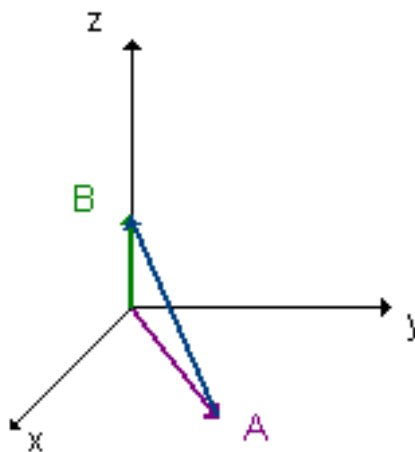


ESERCIZIO N.8

Due forze costanti $\mathbf{F}_1 = \hat{\mathbf{x}} + 2\hat{\mathbf{y}} + 3\hat{\mathbf{z}}$ (in N) e $\mathbf{F}_2 = 4\hat{\mathbf{x}} - 5\hat{\mathbf{y}} - 2\hat{\mathbf{z}}$ (in newton), agiscono entrambe su una particella mentre questa si muove dal punto $A \equiv (20, 15, 0)$ (in m) al punto $B \equiv (0, 0, 7)$ (in m). Qual è il lavoro eseguito sulla particella?

$$\text{Dati: } \mathbf{r}_A = 20\hat{\mathbf{x}} + 15\hat{\mathbf{y}} + 0\hat{\mathbf{z}} \quad \mathbf{r}_B = 0\hat{\mathbf{x}} + 0\hat{\mathbf{y}} + 7\hat{\mathbf{z}}$$



$$\Delta \mathbf{r} = \mathbf{r}_B - \mathbf{r}_A = -20\hat{\mathbf{x}} + (-15)\hat{\mathbf{y}} + 7\hat{\mathbf{z}} \text{ (m)}$$

$$\mathbf{F} = \mathbf{F}_1 + \mathbf{F}_2 = (1+4)\hat{\mathbf{x}} + (2-5)\hat{\mathbf{y}} + (3-2)\hat{\mathbf{z}} = 5\hat{\mathbf{x}} + (-3)\hat{\mathbf{y}} + \hat{\mathbf{z}} \text{ (N)}$$

$$\boxed{L = \mathbf{F} \bullet \Delta \mathbf{r} = F_x \cdot \Delta r_x + F_y \cdot \Delta r_y + F_z \cdot \Delta r_z =}$$

$$= [5 \times (-20)] + [-3 \times (-15)] + (1 \times 7) = -100 + 45 + 7 =$$

$$\boxed{= -48 \text{ J}}$$