5) Calculate $\vec{A} \cdot \vec{B}$

a) 0
b) -19
c) 7
d) -23
e) -4

$$\vec{A}\cdot\vec{B} = (2\hat{i}+3\hat{j}-\hat{k})\cdot(-5\hat{i}-2\hat{j}+3\hat{k})$$
$$= -10-6-3 = -19$$

6) Calculate $\vec{A} \cdot (\vec{B}+\vec{C})$

$$\vec{B}+\vec{C} = -6\hat{i}-3\hat{j}+2\hat{k}$$

a) 0
b) -19
c) 7
d) -23
e) -4

$$\vec{A}\cdot(\vec{B}+\vec{C}) = (2\hat{i}+3\hat{j}-\hat{k})\cdot(-6\hat{i}-3\hat{j}+2\hat{k})$$
$$= -12-9-2 = -23$$

7) The angle between the vectors $\vec{A}$ and $(\vec{B}+\vec{C})$ is about:

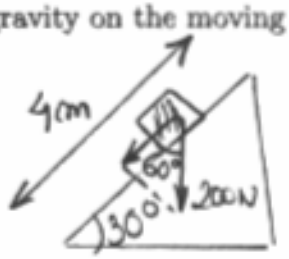
a) 46.3^0
b) 178^0
c) 67.5^0
d) 151^0
e) 12.2^0

$$\cos\theta = \frac{\vec{A}\cdot(\vec{B}+\vec{C})}{|\vec{A}||\vec{B}+\vec{C}|} = \frac{-23}{\sqrt{4+9+1}\sqrt{36+9+4}}$$
$$= \frac{-23}{\sqrt{14}\sqrt{49}} = \frac{-23}{7\sqrt{14}} \rightarrow \theta = \cos^{-1}\left[\frac{-23}{7\sqrt{14}}\right] =$$
$$= 151.4^\circ$$

A 20.0 kg-block moves **4 m upwards** along a rough inclined surface with **constant velocity**. The angle of inclination is of 30° (see figure below) and the surface has a coefficient of kinetic friction given by $\mu_k = 0.58$ (**Use 10 m/s² for gravity**).

8) Find the work given by gravity on the moving block.

a) 800 J
b) -400 J
c) 400 J
d) -800 J
e) None of the above.



FORCE along DISPLACE
KEPT

$$W_g = -(mg\cos 60^\circ)(4m)$$
$$= -(200N)(1/2)(4m)$$
$$= -400\,J$$

9) The work given by friction on the moving block is about