

74. Letting  $B_x = B_y = B_1$  and  $B_z = B_2$  and using Eq. 29-2 and Eq. 3-30, we obtain (with SI units understood)

$$\begin{aligned}\vec{F} &= q\vec{v} \times \vec{B} \\ 4\hat{i} - 20\hat{j} + 12\hat{k} &= 2 \left( (4B_2 - 6B_1)\hat{i} + (6B_1 - 2B_2)\hat{j} + (2B_1 - 4B_1)\hat{k} \right) .\end{aligned}$$

Equating like components, we find  $B_1 = -3$  and  $B_2 = -4$ . In summary (with the unit Tesla understood),  $\vec{B} = -3.0\hat{i} - 3.0\hat{j} - 4.0\hat{k}$ .