

12.2 number 31d: Find a vector of length 7 that points in the same direction as  $\vec{u} = \frac{6}{7}\vec{i} - \frac{2}{7}\vec{j} + \frac{3}{7}\vec{k}$ .

**Answer:** The vector  $\vec{u}$  has length  $\sqrt{\left(\frac{6}{7}\right)^2 + \left(\frac{-2}{7}\right)^2 + \left(\frac{3}{7}\right)^2} = \frac{1}{7}\sqrt{36 + 4 + 9} = 1$ . The vector of length 7 with the same direction as  $\vec{u}$  is  $7\vec{u} = \boxed{6\vec{i} - 2\vec{j} + 3\vec{k}}$ .