

**Example 1.** Find a vector equation for the line through  $(-1, 2, 3)$  and  $(2, -2, 5)$ .

**Example 2.** Find a vector equation for the line through  $(5, -6, 7)$  that is parallel to the line with parametric equations  $x = 1 + t$ ,  $y = 2$ ,  $z = 3 + 2t$ .

**Example 3.** Find the point of intersection of the lines from Examples 1 and 2.

**Example 4.** Find an equation for the plane containing the points  $(1, 2, 3)$ ,  $(-2, 4, 1)$  and  $(0, 6, -2)$ .

**Example 5.** Show that the planes  $2x - 3y + 4z = 2$  and  $4x - 5y - 3z = 0$  are not parallel. Find parametric equations for their line of intersection.