

we may define a new coordinate system in which a point  $\{c, d\}$  will correspond to the vector

$$c\mathbf{v}_1 + d\mathbf{v}_2.$$

For instance, the point  $\{2, -3\}$  is shown on the right side of Figure 2.1.15.

- a. Write the point  $\{2, -3\}$  in standard coordinates; that is, find  $x$  and  $y$  such that

$$(x, y) = \{2, -3\}.$$

- b. Write the point  $(2, -3)$  in the new coordinate system; that is, find  $c$  and  $d$  such that

$$\{c, d\} = (2, -3).$$

- c. Convert a general point  $\{c, d\}$ , expressed in the new coordinate system, into standard Cartesian coordinates  $(x, y)$ .
- d. What is the general strategy for converting a point from standard Cartesian coordinates  $(x, y)$  to the new coordinates  $\{c, d\}$ ? Actually implementing this strategy in general may take a bit of work so just describe the strategy. We will study this in more detail later.