

**Potential Energy Graph** A conservative force  $F(x)$  acts on a  $2.0\text{ kg}$  particle that moves along the  $x$  axis. The potential energy  $U(x)$  associated with  $F(x)$  is graphed in Fig. 10-46. When the particle is at  $x = 2.5\text{ m}$ , its velocity is  $-2.0\text{ m/s}$ . The "kinks" in the graph occur at  $(1, -2.8)$ ,  $(4, -17.2)$ , and  $(8.5, -17.2)$ ; and the endpoint is at  $(15, -2)$ .

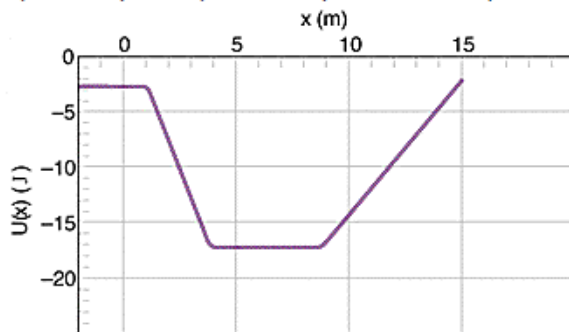


Figure 10-46

(a) What are the magnitude and direction of  $F(x)$  at this position?

NDirection

- ☐ positive  $x$
- ☐ negative  $x$

(b) Between what limits of  $x$  does the particle move?

m (lower limit)

m (upper limit)

(c) What is its speed at  $x = 7.0\text{ m}$ ?

m/s