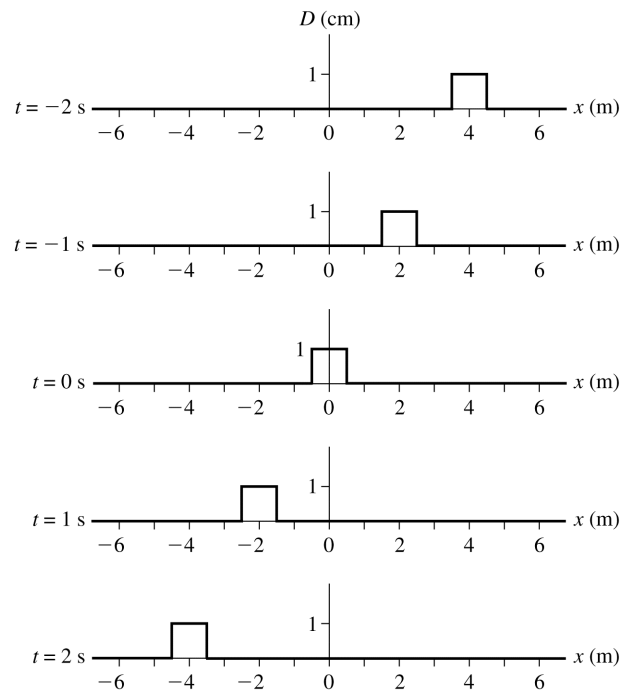


20.41. Visualize: The function $D(x, t)$ represents a pulse that travels in the negative x -direction without changing shape.

Solve: (a)



(b) We can see from the graphs that the wave pulse is moving to the left. From the graphs, the pulse moves $\Delta x = -2$ m during each $\Delta t = 1$ s. The wave's *velocity* (not speed) is $v = \Delta x / \Delta t = (-2 \text{ m}) / (1 \text{ s}) = -2 \text{ m/s}$, and the wave's speed is 2 m/s.

(c) $|x + 2t|$ is a function of the form $D(x + vt)$, so the pulse moves to the left at $v = 2$ m/s.