

Physics Homework
111

Ch6-53

$$\vec{F} = ax^{1/2}\hat{x}, \quad a = 9.5 \text{ N/m}^{1/2}$$

In general,

$$W = \int_{x_0}^{x_1} ax^{1/2} dx = \frac{2}{3}a \left(x^{3/2} \right) \Big|_{x_0}^{x_1} = \frac{2}{3}a (x_1^{3/2} - x_0^{3/2})$$

a) $W = \frac{2}{3}(9.5)(3^{3/2} - 0^{3/2}) = 33 \text{ J}$

b) $W = 60 \text{ J}$

c) $W = 78 \text{ J}$