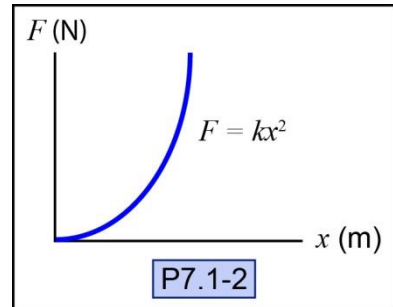


P7.1-2)^{fe} A nonlinear spring is pulled by force F . The force required to deform the spring is given by $F = kx^2$, where x is the spring displacement beyond its unstretched length and k is the spring constant. Determine the work done by F as a function of spring displacement.



Given:

Find:

Solution:

Work

Circle the work equation that we need to use?

$$U = \int F dx$$

$$U = F \Delta x$$

$$U = F(x_2 - x_1) \cos \theta$$

Calculate the work.

a) $U = kx^3/2$

b) $U = kx^3/3$

c) $U = kx^2$

d) $U = kx$