$$= -\frac{1}{2}(40.0\text{ kg})(6.0\,\text{m/s})^2 - \frac{1}{2}\left(\frac{1}{2}(40.0\text{ kg})(r^2)\left(\frac{6.0\,\text{m/s}}{r}\right)^2\right) = -1080.0\text{ J}$$