A particle of mass m moves io a circle of radius r. Its velocity v=k(s)^1/2. Calculate force on the particle.

<div align="center">Solution</div>

we are given:

$$m \quad, \quad r \quad, \quad v = k(s)^{(1/2)} \quad .$$

For a circular motion:
The acceleration due to change in the direction is:

$$a = \frac{v^2}{r}$$

According to the Second Newton's Law:

$$F = m * a$$

Thus:

$$F = m * a = \frac{m * v^2}{r} = \frac{m * (k(s)^{(1/2)})^2}{r} = mk^2 \frac{|s|}{r}$$

Answer: $\quad F = mk^2 \frac{|s|}{r}$

references:
1. http://en.wikipedia.org/wiki/Circular_motion#Formulas_for_uniform_circular_motion
2. http://en.wikipedia.org/wiki/Newton%27s_laws_of_motion#Newton.27s_second_law