ENGR-2060

E.M. - DYNAMICS

NAME

DATE

SOLUTIONS

PROBLEM: AP-5

GIVEN:

A particle travels to the right along a straight line with a velocity $v = [5/(4 + s)]$ m/s, where s is in meters. Determine its position when $t = 6$ s if $s = 5$ m when $t = 0$.

REQUIRED:

$S_6 =$

SOLUTION:

$$v = \frac{5}{4+s} = \frac{ds}{dt}$$

$$\int_{t_0}^{t} 5\,dt = \int_{s_0}^{s} 4+s\,ds$$

$$5t = 4s + \frac{s^2}{2} - \left[20 + \frac{25}{2}\right]$$

$$t = 6 \quad s = 7.87,\ -15.87$$

$$\boxed{S_6 = 7.87^{m}}$$