

1) Given:

$$a_c = 3.00 \text{ m/s}^2$$

$$r = 2.1 \text{ m}$$

$$v_T = ?$$

Soln:
$$a_c = \frac{v_T^2}{r}$$

$$v_T^2 = a_c r$$
$$= (3.00 \text{ m/s}^2)(2.1 \text{ m})$$

$$v_T = 2.5 \text{ m/s}$$

3) Given:

$$r = 1.5 \text{ m}$$

$$v_T = 1.5 \text{ m/s}$$

$$a_c = ?$$

Soln:
$$a_c = \frac{v_T^2}{r}$$

$$= \frac{(1.5 \text{ m/s})^2}{1.5 \text{ m}}$$

$$a_c = 1.5 \text{ m/s}^2$$

4) Given:

$$a_c = 15.4 \text{ m/s}^2$$

$$v_T = 30.0 \text{ m/s}$$

$$r = ?$$

Soln:
$$a_c = \frac{v_T^2}{r}$$

$$r = \frac{v_T^2}{a_c}$$

$$= \frac{(30.0 \text{ m/s})^2}{15.4 \text{ m/s}^2}$$

$$r = 58.4 \text{ m}$$