

90. (a) With  $v = c/10 = 3 \times 10^7$  m/s and  $a = 20g = 196$  m/s<sup>2</sup>, Eq. 4-32 gives

$$r = \frac{v^2}{a} = 4.6 \times 10^{12} \text{ m} .$$

- (b) The period is given by Eq. 4-33:

$$T = \frac{2\pi r}{v} = 9.6 \times 10^5 \text{ s} .$$

Thus, the time to make a quarter-turn is  $T/4 = 2.4 \times 10^5$  s or about 2.8 days.