

- 69** (a)  $\frac{k}{\sqrt{D}} = \frac{2.82 \times 10^7}{\sqrt{42.5 \times 10^6}} \approx 4326 > 2090 = V \Rightarrow$  the orbit of Explorer IV is elliptic.
- (b)  $\frac{k}{\sqrt{D}} = \frac{2.82 \times 10^7}{\sqrt{42.5 \times 10^6}} \approx 4326 \Rightarrow$  the increase in velocity must be greater than  $4326 - 2090 = 2236$  m/sec. Its speed must increase by at least 2236 m/sec.
- (c) The minimum escape velocity is determined by the equation  $\frac{k}{\sqrt{D}}$ . If  $D$  is larger, then the velocity is less and, therefore, this speed is easier to attain with less rocket fuel.