

11.3#3

$$R_n \leq \int_n^{\infty} \frac{2}{x^3} dx < .005$$

$$\int_n^{\infty} \frac{2}{x^3} dx = \lim_{t \rightarrow \infty} \int_n^t 2x^{-3} dx = \lim_{t \rightarrow \infty} \left. \frac{2x^{-2}}{-2} \right|_n^t$$

$$= \lim_{t \rightarrow \infty} \left. -\frac{1}{x^2} \right|_n^t = \lim_{t \rightarrow \infty} \left(-\frac{1}{t^2} - \left(-\frac{1}{n^2} \right) \right) = \frac{1}{n^2}$$

want

$$\frac{1}{n^2} < .005$$

$$\Rightarrow \frac{1}{.005} < n^2$$

$$200 < n^2$$

$$14.14 < n$$

$$\text{so } \underline{n=15}$$