

$a_n = n^2 e^{-5n} = \frac{n^2}{e^{5n}}$ . Since  $\lim_{x \rightarrow \infty} \frac{x^2}{e^{5x}} \stackrel{H}{=} \lim_{x \rightarrow \infty} \frac{2x}{5e^{5x}} \stackrel{H}{=} \lim_{x \rightarrow \infty} \frac{2}{25e^{5x}} = 0$ , it follows that  $\lim_{n \rightarrow \infty} a_n = 0$ . Converges