

# Page 250, #10(v)

## 1 p250, #10(v), §1 Asked

Asked:

$$\lim_{x \rightarrow -\infty} x^2 e^x \quad (1)$$

## 2 p250, #10(v), §2 Observations

$$\lim_{x \rightarrow -\infty} x^2 e^x$$

$$x^2 \rightarrow \infty \quad e^x \rightarrow 0$$

## 3 p250, #10(v), §3 L'Hopital

$$\lim_{x \rightarrow -\infty} \frac{x^2}{e^{-x}} = \lim_{x \rightarrow -\infty} \frac{(x^2)'}{(e^{-x})'} = \lim_{x \rightarrow -\infty} \frac{2x}{-e^{-x}} = \lim_{x \rightarrow -\infty} \frac{2}{e^{-x}} = 0$$

## 4 p250, #10(v), §4 Better

$$\lim_{x \rightarrow -\infty} \frac{x^2}{e^{-x}} = 0$$

since  $e^{|x|}$  is greater than any power of  $x$  for large  $|x|$ .