

Use continuity to evaluate the limit.

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

Take the limit:

$$\lim_{x \rightarrow 1} e^{2x^2 - 2x}$$

The limit of a quotient is the quotient of the limits:

$$= \frac{\lim_{x \rightarrow 1} e^{2x^2}}{\lim_{x \rightarrow 1} e^{-2x}}$$

Using the continuity of e^{2x} at $x = 1$ write $\lim_{x \rightarrow 1} e^{2x}$ as $e^{\lim_{x \rightarrow 1} 2x}$:

$$= e^{-\left(\lim_{x \rightarrow 1} 2x\right)} \left(\lim_{x \rightarrow 1} e^{2x^2}\right)$$

Factor out constants:

$$= e^{-2\left(\lim_{x \rightarrow 1} x\right)} \left(\lim_{x \rightarrow 1} e^{2x^2}\right)$$

The limit of x as x approaches 1 is 1:

$$= \frac{\lim_{x \rightarrow 1} e^{2x^2}}{e^2}$$

Using the continuity of e^{2x^2} at $x = 1$ write $\lim_{x \rightarrow 1} e^{2x^2}$ as $e^{\lim_{x \rightarrow 1} 2x^2}$:

$$= e^{\lim_{x \rightarrow 1} 2x^2 - 2}$$

Factor out constants:

$$= e^{2\left(\lim_{x \rightarrow 1} x^2\right) - 2}$$

Using the power law, write $\lim_{x \rightarrow 1} x^2$ as $\left(\lim_{x \rightarrow 1} x\right)^2$:

$$= e^{2\left(\lim_{x \rightarrow 1} x\right)^2 - 2}$$

The limit of x as x approaches 1 is 1:

Answer:

$$= 1$$