

2. [4 points] Compute the following limit. Fully justify your answer including using **proper limit notation**.

$$\lim_{x \rightarrow 1} \frac{\sin(\ln(x))}{x^2 - 1}$$

Answer: $\lim_{x \rightarrow 1} \frac{\sin(\ln(x))}{x^2 - 1} =$ _____

3. [7 points] **Compute** the value of the following improper integral if it converges. If it does not converge, use a **direct computation** of the integral to show its divergence. Be sure to show your full computation, and be sure to use **proper notation**.

$$\int_0^{\infty} \frac{x}{e^{3x^2}} dx$$

Circle one: **Diverges** **Converges to** _____