

C12 - 1.9 - Limits Squeeze Theorem

$$\lim_{x \rightarrow 0} x^2 \sin x = 0$$

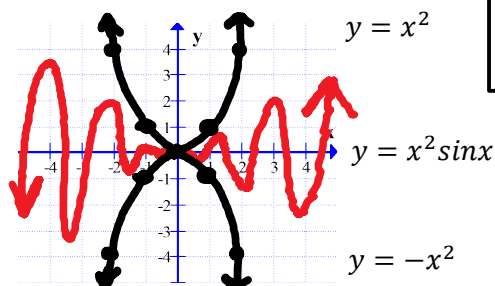
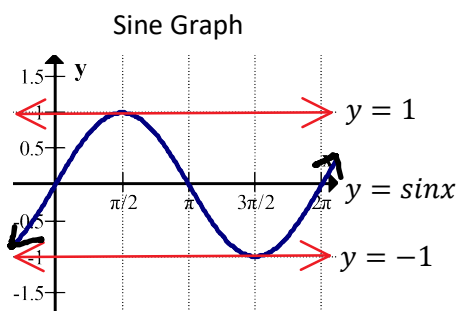
$$-1 \leq \sin x \leq 1$$

$$-1x^2 \leq x^2 \sin x \leq 1x^2$$

$$\lim_{x \rightarrow 0} -1x^2 \leq \lim_{x \rightarrow 0} x^2 \sin x \leq \lim_{x \rightarrow 0} 1x^2$$

$$0 \leq 0 \leq 0$$

Times both sides by x^2



Solve using the squeeze theorem.

$$\lim_{x \rightarrow 0} x^2 \cos\left(\frac{1}{x}\right) =$$

$$\lim_{x \rightarrow 0} x^2 \sin\left(\frac{1}{x}\right) =$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} =$$

$$\lim_{x \rightarrow \infty} \frac{\sin x}{x} =$$

$$\lim_{x \rightarrow \infty} \frac{\cos 2x}{x^2} =$$

$$f(c) \leq g(c) \leq h(c)$$

$$\lim_{x \rightarrow c} f(x) \leq \lim_{x \rightarrow c} g(x) \leq \lim_{x \rightarrow c} h(x)$$

$$L \leq L \leq L$$

$$\lim_{x \rightarrow c} g(x) = L$$