

Worksheet 5c  
[The Squeeze Theorem]

- Use the Squeeze Theorem to show that
  - $\lim_{x \rightarrow 0} \left( \sqrt{x^4 + x^3} \sin \left( \frac{\pi}{x} \right) \right) = 0$
  - $\lim_{x \rightarrow 0} \left( x^2 \cos \left( \frac{20\pi x}{7} \right) \right) = 0$
- If  $1 \leq f(x) \leq (x^2 + 2x + 2)$   
for all values of  $x$ , determine  $\lim_{x \rightarrow -1} f(x)$  .
- If  $3x \leq f(x) \leq x^3 + 2$  for  $0 \leq x \leq 2$   
determine  $\lim_{x \rightarrow 1} f(x)$  .
- Use the Squeeze theorem to determine  $\lim_{x \rightarrow 0} \left( x^4 \cos \left( \frac{4}{x} \right) \right)$
- Use the Squeeze theorem to show that  $\lim_{x \rightarrow 0^+} \left( \sqrt{x^3} e^{\sin \left( \frac{\pi}{x} \right)} \right) = 0$
- Use the Squeeze Theorem to evaluate the following limit :

$$\lim_{x \rightarrow \infty} \left( \frac{\sin(x)}{x} \right)$$