

Calculus Worksheet: Limits of Functions (2) – Squeeze Theorem

1. f and g are functions such that $f(x) = \sqrt{x^2 + 2|x|}$ and $a \leq g(x) \leq b$, where a and b are real numbers.

Find

$$\lim_{x \rightarrow 0} f(x)g(x)$$

2. Find the following limits

a) $\lim_{x \rightarrow 0} x^3 \sin\left(\frac{1}{x}\right)$

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

c) $\lim_{x \rightarrow \infty} \frac{4x^2 - \sin(2x)}{3x^2 + 10}$