C12

Sandwich Theorem Practice

1. Evaluate $\lim_{x \to 1} f(x)$ using the Sandwich Theorem given that $5 \leq f(x) \leq x^2 + 6x - 2$.

2. Evaluate $\lim_{x \to 0} x^2 \sin\left(\frac{5}{x}\right) + 1$.

3. Evaluate $\lim_{x \to 0} x^4 \sin\left(\frac{7}{x}\right)$.

4. Evaluate $\lim_{x \to 0} x \sin(x)$.

5. Evaluate $\lim_{x\to 0}(x-1)^2 \cos\left(\frac{1}{x-1}\right)$.

6. Evaluate $\lim_{x\to 2^+} \sqrt{x-2}\cos\left(\frac{1}{x-2}\right)$

7. A function f(x) satisfies the inequalities $\frac{2\sin(\frac{\pi}{2}x)}{x-3} < f(x) < -e^{x-1}$ when $x \to 1^-$. Find $\lim_{x\to 1^-} f(x)$.

8. Find $\lim_{x\to 1}(x^2 + x - 2)\cos\left(\frac{x}{x-1}\right)$.