VECTOR CALCULUS, Week 2 Extra

2.1-2.5,2.8,3.1 Practice Problems; 5.8, The Squeeze Theorem Practice Problems

2.1-2.5,2.8,3.1 Practice Problems

Ex: Compute the following derivatives.

1. $\frac{d}{dx} 4 \sin^2 x$
2. $\frac{d}{dx} \sec(1 + x^2)$

Ex: Estimate the value of $(8.06)^{2/3}$.

Ex: Find the absolute extremum points and values of $f(x) = x^3 - 3x^2 + 1$ over $[1, 4]$.

5.8, The Squeeze Theorem Practice Problems

Ex: Calculate the following limits.

1. $\lim_{x\to 0} \frac{x^3+2x}{x+1+\frac{1}{x^2}}$.
2. $\lim_{x\to\infty} \frac{\sqrt[5]{2x^2+x}}{4x^{2/5}+x^{1/10}}$.
3. $\lim_{x\to \frac{\pi}{2}^-} \sec x - \tan x$

Ex: Use the Squeeze Thm to show $\lim_{x\to\infty} x^2 + \frac{\sin x}{x^2} = \infty$.