Calculus Honors - M7H

Limits - Homework 2

1. Evaluate the following limits, if they exist. Show your work:

(i) $\lim_{x\to 0} e^{\tan x}$

(ii) $\lim_{x\to 4} \cos\left(\sqrt{x-3}\right)$

(iii) $\lim_{x\to \pi} \tan\left(\sin\left(\cos\left(\frac{x}{2}\right)\right)\right)$

(iv) $\lim_{x\to 0} \frac{\sin\left(\tan\left(3x\right)\right)}{x}$

(v) $\lim_{x\to 2^-} \frac{1}{x-2}$

(vi) $\lim_{x\to 1^+} \frac{x^2+3}{x-1}$

(vii) $\lim_{x\to -2} \frac{x+3}{x^2-4}$

(viii) $\lim_{x\to 3} \frac{x^2-9}{(x-3)^2}$

(ix) $\lim_{x\to 0} \frac{x^2-1}{x}$

(x) $\lim_{x\to 1^-} \frac{1}{(x-1)^2}$

(xi) $\lim_{x\to +\infty} \frac{2x^2+3}{x^3+1}$

(xii) $\lim_{x\to -\infty} \frac{5x}{x^4+7}$

(xiii) $\lim_{x\to +\infty} \frac{2x^3+x}{x^2+1}$

(xiv) $\lim_{x\to +\infty} \frac{-3x^4+x}{x^3+2}$

(xv) $\lim_{x\to +\infty} \frac{-x^6+x}{x^5+1}$

(xvi) $\lim_{x\to -\infty} \frac{-4x^3+x}{2x^3+7}$

(xvii) $\lim_{x\to 2} \frac{x^2+1}{x^2-4}$

(xviii) $\lim_{x\to -3} \frac{2x^2+5x+3}{x^2+4x+3}$

(xix) $\lim_{x\to 4} \frac{3x^2-2x+1}{x^2-8x+16}$

(xx) $\lim_{x\to 2} \frac{4x^2+x-1}{x^3-4x}$

(xxi) $\lim_{x\to \infty} \frac{x^2\cos(1/x)}{x^3+1}$

(xxii) $\lim_{x\to \infty} \frac{\sin^2(x)}{x}$