Calculus II (Maths 201–NYB)

1. Evaluate the following integrals:

(a) $\displaystyle\int \frac{x^2 + x - 1}{(x+1)(x^2 - 1)}\, dx$

(b) $\displaystyle\int_2^\infty \frac{dx}{x^2-1}$

2. Evaluate the limit $\lim\limits_{x \to 0}(1 + \sin 3x)^{(1/x)}$

3. Find the volume of the solid obtained when the region between the curves $y = 2x - x^2$ and $y = x^3$ above the x-axis is rotated about the y-axis.