Instructor: Dr. R.A.G. Seely Quiz 4
(version A)

Calculus II (Maths 201–NYB)
With Answers

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

   $$\int \frac{2x+1}{x(x-1)^2}\,dx = \ln x - \frac{3}{x-1} - \ln(x-1) + C$$

2. Evaluate the limit $\displaystyle\lim_{x\to 0^+} x^{\tan x}$

   $$\lim_{x\to 0^+} x^{\tan x} = \mathrm{e}^0 = 1$$

3. Set up (but don't evaluate) the integral needed to calculate the volume of the solid obtained when the region between the curves $y = x + 2$ and $y = x^2$ is rotated about the straight line $y + 1 = 0$.

   $$V = \pi \int_{-1}^{2} ((x+3)^2 - (x^2+1)^2)\,dx$$