Formulae sheet for
MATH 2205, Multivariate Calculus
Semester 1, 2017

Some antiderivatives you may find useful:

$$\int \sec^2 x\,dx = \tan x + C, \qquad \int \csc^2 x\,dx = -\cot x + C,$$

$$\int \sec x \tan x\,dx = \sec x + C, \qquad \int \csc x \cot x\,dx = -\csc x + C,$$

$$\int \frac{1}{\sqrt{1-x^2}}\,dx = \sin^{-1} x + C, \qquad \int \frac{1}{1+x^2}\,dx = \tan^{-1} x + C,$$

$$\int \sin^2 x\,dx = \frac{1}{2}(x - \sin x \cos x) + C,$$
$$\int \sin^3 x\,dx = -\cos x + \frac{1}{3}\cos^3 x + C.$$
$$\int \sin^4 x\,dx = \frac{1}{8}(3x - 3\sin x \cos x - 2\sin^3 x \cos x) + C,$$

$$\int \cos^2 x\,dx = \frac{1}{2}(x + \sin x \cos x) + C,$$
$$\int \cos^3 x\,dx = \sin x - \frac{1}{3}\sin^3 x + C.$$
$$\int \cos^4 x\,dx = \frac{1}{8}(3x + 3\sin x \cos x + 2\cos^3 x \sin x) + C.$$

A series you may find useful:

$$\ln(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \dots$$