

Additional Mathematics Mock Paper 2008

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1. Find $\int \frac{dx}{\left(1-\frac{x}{3}\right)^5}$. (2 marks)
2. Find $\frac{d}{dx} \frac{1}{x^2}$ from first principles. (4 marks)
3. (a) Expand $(k - 2x)^7$, where k is a constant.
(b) If the coefficient of x^4 in $(k^2 - 4kx + 4x^2)^7$ is 16016, by using (a) or otherwise, find k . (6 marks)
4. Solve $\frac{1}{x} < k$, where $k > 0$. (3 marks)
5. (a) Find the range of $y = \sin(30^\circ - \theta) + 2\cos\theta$, where θ is real.
(b) Hence find the range of $\frac{1}{y^2+2}$. (7 marks)
6. Solve $|x - 1| + |x - 2| = 1$.
Hence, or otherwise, solve $|x + 1| + |x + 2| = 1$. (6 marks)