

Question Set 4**Student Number**

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1 If $(1+ax)^b = 1+60x+1620x^2+\dots$, then the values of a and b are (a,b)

- A. $(30, 2)$ B. $(15, 4)$ C. $(6, 10)$ D. $(-4, -15)$ E. $(12, 5)$
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2 The number N has 2005 digits and is exactly divisible by 7. From left to right, the first 2004 digits are all the same. The final digit (the units digit) could be

- A. 0 or 7 B. 2 or 9 C. 3 D. 5 E. 6
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3 Evaluate $2^{2005} - 2^{2004} - 2^{2003} - 2^{2002} - 2^{2001}$

- A. 2^{2001} B. 2 C. 2^{-6005} D. 2^{2000} E. 1
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4 The dimensions of a rectangular box are positive integers a , b , and c and the volume of this box is 2004 cubic units. Find the minimum sum $a + b + c$.

- A. 200 B. 240 C. 175 D. 174 E. 180
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5 What is $\int_0^{\ln\left(\frac{1}{e}\right)} \frac{1}{1+e^x} dx$

- A. 0 B. $\ln\left(\frac{2}{e+1}\right)$ C. $\ln 2$ D. e E. ∞
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SCORE: