Exercise Sheet 8

Hand in your work by 27 November.

1. Evaluate the following improper integrals, if they are defined.

    (a) (Warm-up question*) $\displaystyle\int_1^\infty e^{-x/5}\,dx$

    (b) $\displaystyle\int_0^1 \frac{dx}{(x-1)^4}$

    (c) $\displaystyle\int_1^2 \frac{dx}{(x-1)^4}$

    (d) $\displaystyle\int_{-\infty}^3 x^2 e^x\,dx$

2. Approximate the integral
$$\int_1^2 \ln x\,dx$$
    using the trapezium rule with 4 intervals (of equal length) and with 8 intervals. Work to 5 decimal places, giving the answer to 4 decimal places.

3. Repeat the previous question, using Simpson's rule instead of the trapezium rule.

Solutions will be available after the hand-in date at:
`http://people.bath.ac.uk/rm257/MA10192/`

RM, 07/11/2017

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*Do not hand in your work for this question.