

Quiz 11 Key — MA16020 — February 21, 2018

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Min	Mean	Max
1	5.8	10

1. (6 points) Rewrite each of these (improper) integrals as a limit of an integral. Do not solve the integral, and do not evaluate the limit.

(a)  $\int_0^{\infty} \ln(x+1) dx$

(b)  $\int_3^6 \frac{6}{x^2 - 3x} dx$

(c)  $\int_0^{\pi/2} \sec(x) dx$

(a)  $\lim_{b \rightarrow \infty} \int_0^b \ln(x+1) dx$

(b)  $\lim_{a \rightarrow 3^+} \int_a^6 \frac{6}{x^2 - 3x} dx$

(c)  $\lim_{b \rightarrow \pi/2^-} \int_0^b \sec(x) dx$

2. Let  $f(b) = \int_1^b \frac{1}{x^3} dx$ .

- (a) (3 points) Simplify  $f(b)$  completely by solving the integral.
- (b) (1 points) Find  $\lim_{b \rightarrow \infty} f(b)$ .

(a)  $f(b) = \frac{1}{2} - \frac{1}{2b^2}$

(b)  $1/2$