

Math 181 Quiz 8 Version A

1. Find the following limits:

(i) $\lim_{x \rightarrow 2} \frac{x^2 - x - 2}{x - 2}$

(ii) $\lim_{n \rightarrow \infty} (3^{1/n} - 3^{-n})$

2. Find the following integrals:

(i) $\int_0^1 (x + 1)(x + 2) dx$

(ii) $\int_0^2 \left| \frac{x - 1}{x + 2} \right| dx$

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3. Let $f(x) = x^\alpha$ where $\alpha > 0$ and $x_j = b^{j/n}$ where $b > 1$.

(i) Find $\Delta x_j = x_j - x_{j-1}$.

(ii) Simplify $\sum_{j=1}^n f(x_j)\Delta x_j$.

(iii) Compute $\lim_{n \rightarrow \infty} \sum_{j=1}^n f(x_j)\Delta x_j$.