

# Math 2315 - Calculus 2

## Cumulative Quiz #4 - 2021.04.01

Name: \_\_\_\_\_

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1. Compute the following limit:  $\lim_{n \rightarrow \infty} n^{a/n}$ , for  $a > 0$ .

2. Determine whether the following series converge or diverge:

(a)  $\sum_{k=1}^{\infty} \frac{3k^2 - 1}{4k^2 + 2}$

(b)  $\sum_{k=1}^{\infty} (-1)^k \frac{3k - 1}{4k^2 + 2}$

(c)  $\sum_{k=1}^{\infty} \frac{3k + \cos(k)}{4k^2 + 2}$

(d)  $\sum_{k=1}^{\infty} \frac{e^k}{3^{k-1}}$

(e)  $\sum_{k=1}^{\infty} \frac{10^k}{k!}$

(f)  $\sum_{k=1}^{\infty} \left( \frac{9 + 99k}{10 + 100k} \right)^k$

3. Compute the following integrals:

(a)  $\int \cos(w) \sin^2(w) \, dw$

(b)  $\int \frac{1}{\sqrt{x^2 - 9}} \, dx$