

NAME:

ID:

MATH 317 Q1 WINTER 2017 QUIZ 5 SOLUTIONS

Mar. 24, 2017, 25 minutes

- The quiz has 3 problems. Total 10 + 1 points.

QUESTION 1. (5 PTS) *Prove or disprove: the infinite series $\sum_{n=0}^{\infty} \frac{e^{nx}}{n^2}$ converges uniformly on $(-\infty, 0)$.*

QUESTION 2. (5 PTS) *Prove that $f(x) := \sum_{n=0}^{\infty} n^2 e^{-nx}$ is continuous on $(0, \infty)$.*

QUESTION 3. (1 BONUS PT) *Prove that $\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{x^2+n}$ converges uniformly on \mathbb{R} .*