

## KFUPM

MATH 102

QUIZ #4

Sec. 17

Time: 25min

Name:

ID:

Q1. Write out the form of the partial fraction decomposition of the following rational function. Do not evaluate the coefficients.

$$f(x) = \frac{x^2 - 2x + 4}{(x + 1)^3 (x^2 + 1)}.$$

Q2. Examine whether the following sequence is convergent or divergent. If it is convergent, find its limit:

$$a_n = \sqrt{n^2 + n} - \sqrt{n^2 - n}.$$

Q3. Evaluate the integral

$$\int \frac{dx}{(9 - x^2)^{\frac{3}{2}}}.$$

Q4. Evaluate the improper integral

$$\int_0^1 \frac{dx}{\sqrt[3]{1-x}}.$$