

Math 199, Spring 2022
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Mock Exam 1 - Integration

Estimated Time: 20 minutes.

1) True or False:

(a) $\int \frac{1}{x^2+1} dx = \int \frac{1}{u} du = \ln|u| + C = \ln|x^2+1| + C.$

(b) The polynomial $x^2 + x + 1$ is irreducible.

(c) The polynomial $x^3 + 1$ is irreducible.

(d) $\int \frac{x}{x+1} dx = x - \int \frac{1}{x+1} dx.$

2) Compute the integrals:

(a) $\int \frac{3x^2+1}{x^3-2x^2+x} dx$

(b) $\int \frac{x}{\sqrt{x^2+4}} dx$