

## Practice Exam 1

1. Evaluate  $\int \tan x \sec^{-2} x \, dx$ .
2. Evaluate  $\int \cos 2x \cos x \, dx$ .
3. Evaluate  $\int \frac{2x\sqrt{-x^2 - 2x}}{x + 1} \, dx$ .
4. Evaluate  $\int x^2(3x - 2)^{4/5} \, dx$  first with a rationalizing substitution, then by parts. Your answers will look very different. Bonus: show that they are equal.
5. Does  $\int_1^\infty \frac{dx}{x^3 - x^2}$  converge or diverge? If it converges, what is the value?
6. Evaluate  $\int \frac{x^3 + 1}{x^3 - x^2} \, dx$ .
7. Does  $\int_{-2}^0 \frac{2x\sqrt{-x^2 - 2x}}{x + 1} \, dx$  converge or diverge? If it converges, what is the value?