

Mathematics 1553 (McGehee) Practice Test 1-2 Spring 2003

This is a closed-book, closed-notes, no-machines test.

1. Solve this indefinite integration problem, showing your procedure:

$$\int \frac{\sqrt{x+4}}{x} dx \quad (0 < x < \infty).$$

Suggestion: Let $u = \sqrt{x+4}$.

2. Evaluate each of these three definite integrals, showing your procedure:

$$\int_0^\pi \cos x dx \quad \int_0^\pi \cos^2 x dx \quad \text{and} \quad \int_0^\pi \cos^3 x dx.$$

3. Solve this indefinite integration problem, showing your procedure:

$$\int x^2 e^x dx \quad (-\infty < x < \infty).$$

4. Evaluate this improper integral, showing your procedure:

$$\int_0^\infty \frac{x^2}{(x^2 + 1)^3} dx.$$

5. Solve this indefinite integration problem, showing your procedure:

$$\int \ln(e^{2x}) dx \quad (-\infty < x < \infty).$$