

### Practice Test Three

**1.** (15 points) Indefinite integrals

$$a) \int \frac{1}{\sqrt[5]{x^2}} dx \quad b) \int \frac{2x^3 + 1}{x^3} dx$$

**2.** (10 points) Find the area of the region under the graph of  $f(x) = x + 2$  on  $[0, 2]$ . You can compare the solution with the area found using geometry.

**3.** (15 points)

$$\int 2x\sqrt{x^2 - 3}dx, \quad \int \frac{4t^3}{(1 + t^4)^4} dt$$

**4.** (10 points)

$$\int x^2 + 2xt + t^2 dx$$

**5.** (15 points) Find the area bounded by the curves  $y = x^2 + x - 5$  and  $y = 2x + 1$ . (Hint: Draw the graph first)

**6.** (15 points)

$$\int 3xe^{x^3+2} dx, \quad \int \frac{2t}{t^2+1} dt$$

**7.** (20 points)

$$\int_0^1 \frac{1}{x+1} dx, \quad \int_0^1 \frac{e^x}{1+e^x} dx$$