

This intriguing fifty minute test covers sections 8.1--8.7 of *Calculus* by James Stewart 4th ed. Clearly indicate your answers and **show your work**. All parts of problems are ten points each.

1. Use Simpson's Rule to approximate the area of the pool at the right.

2. Integrate three of the following four functions. Cross out the fourth.

a. $\int 2x \cos(51x) dx$

b. $\int (\ln x)^2 dx$

c. $\int_0^{\pi/2} \sin^2 x \cos^2 x dx$

d. $\int \sin^3 x \cos^3 x dx$

3. Integrate three of the following four functions. Cross out the fourth.

a. $\int \frac{(x-2)dx}{(x+5)(x-1)}$

b. $\int \frac{dx}{x\sqrt{\ln x}}$

c. $\int \frac{dt}{(t+4)(t-1)}$

d. $\int \frac{x^2 dx}{(x+1)}$

4. Integrate three of the following four functions. Cross out the fourth.

a. $\int \frac{\sqrt{x^2+1}}{x^4} dx$

b. $\int \frac{dx}{25x^2+1}$

c. $\int \sqrt{1-4x^2} dx$

d. $\int_0^3 \frac{dx}{\sqrt{9+x^2}}$