

Homework #17

Due Wednesday, November 19

No late papers accepted! No excuses!

1. If  $\int_0^2 f(x)dx = \pi$ ,  $\int_0^2 7g(x)dx = 7$ , and  $\int_0^1 g(x)dx = 2$ , find the values of the following.

a)  $\int_0^2 g(x)dx$

b)  $\int_1^2 g(x)dx$

c)  $\int_2^0 f(x)dx$

d)  $\int_0^2 \sqrt{2}f(x)dx$

e)  $\int_0^2 (g(x) - 3f(x))dx$

2. Find the total area of the region between the graph of  $f$  and the x-axis.

$$f(x) = x^2 - 4x + 3 \quad 0 \leq x \leq 3$$

3. What values of  $a$  and  $b$  minimize the value of  $\int_a^b (x^4 - 2x^2) dx$ ?

4. Evaluate the following integrals.

a)  $\int_{-4}^4 |x| dx$

b)  $\int_{-\pi/3}^{\pi/3} \sin^2 t dt$

5. Use the Fundamental Theorem of Calculus, Part 1 to find the derivative.

a)  $y = \int_0^{e^{x^2}} \frac{1}{\sqrt{t}} dt$

b)  $y = \int_{2^x}^1 \sqrt[3]{t} dt$