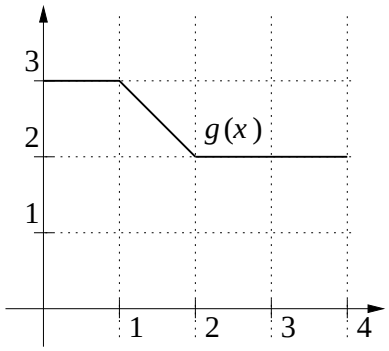
**Math 116 Quiz 2: $\oint$ 6.4, 7.1-7.2** **Name:** _____
**Tue 18 Sep 2012**

You have 15 minutes to complete this quiz. Eyes on your own paper and good luck!

1. **Definitions/Concepts.** (1 pt) Fill in the blank:

   The method of substitution reverses the _____ rule. The method of integration by parts reverses the _____ rule.

2. **Questions/Problems.** (4 pts) Suppose $g(x)$ is given by the graph to the right, below. Find $\int_0^4 x\, g'(x)\, dx$.




3. **Computations/Algebra.**

   (a) (3 pts) Using the 2nd FTOC and the Chain Rule, calculate $\frac{d}{dt}\int_{e^t}^{t^4} \sqrt{8+x^2}\, dx$.

   (b) (3 pts ea) Evaluate the integrals. **Then check by differentiating your answer.**

   i. $\int x^2 \sin x dx =$

   ii. $\int (\alpha^2+3)^2 d\alpha =$

**MORE QUIZ ON THE BACK –>**

iii. $\int \frac{e^x - e^{-x}}{e^x + e^{-x}} dx =$

iv. $\int (\ln t)^2 dt$

**ChAlLeNgE pRoBlEm:** Derive the following formula:

$$\int x^n e^x dx = x^n e^x - n \int x^{n-1} e^x dx$$