MAT 141
Quiz #5
October 14, 2004

Intructions: You have 15 minuntes for this quiz. You may not use any books, notes, or calculators. Justify every statement that you make. If you wish to use a theorem proved in class, state the theorem precisely. Good luck.

1. $s(x)$ and $t(x)$ are two step functions such that

$$\int_0^1 s(x)\,dx = 4 \qquad \int_0^2 s(x)\,dx = 4 \qquad \int_0^3 s(x)\,dx = 1$$

$$\int_0^1 t(x)\,dx = 2 \qquad \int_0^2 t(x)\,dx = -1 \qquad \int_0^3 t(x)\,dx = 5$$

Compute each of the following:

- $\displaystyle\int_1^3 s(x)\,dx$
- $\displaystyle\int_0^1 3s(x)\,dx$
- $\displaystyle\int_0^1 s(3x)\,dx$
- $\displaystyle\int_0^2 (2s+t)(x)\,dx$
- $\displaystyle\int_0^1 t(x+1)\,dx$

2. Compute $\displaystyle\int_2^{10} \left[\sqrt{x}\right] dx$, where $\left[\ \cdot\ \right]$ denotes the greatest integer function.