Test 2

Problem	1	2	3	4	5	6	7	Score
Points								

NAME: Solution Key

Show all your work for full credit. Calculators, the textbook, and lecture notes are not allowed.

Problem 1. Evaluate the integral $\int e^{2x} \sin x \, dx$. Use integration by parts twice.

$$\int e^{2x}\sin x\,dx = -\int e^{2x}(\cos x)'\,dx = -e^{2x}\cos x + 2\int e^{2x}\cos x\,dx$$

$$= -e^{2x}\cos x + 2\int e^{2x}(\sin x)'\,dx$$

$$= -e^{2x}\cos x + 2e^{2x}\sin x - 4\int e^{2x}\sin x\,dx.$$

$$\Rightarrow 5\int e^{2x}\sin x\,dx = e^{2x}(2\sin x - \cos x) + C$$

$$\int e^{2x}\sin x\,dx = \frac{e^{2x}}{5}(2\sin x - \cos x) + C.$$