Math 126 TEST I

Do not use any books or notes. You can use a calculator, but not graphing calculator. If you use a calculator, leave your results in exact form instead of decimal form. **Show all work for full credit.**

1. Evaluate the definite integral: (18 points)

(a) $\int_{-1}^{0} (2x - e^x)\,dx$ (b) $\int_{0}^{1} x^{7/3}\,dx$ (c) $\int_{1}^{2} \frac{4 + x^2}{x^3}\,dx$

2. Find the derivative of the function: (8 points)

(a) $f(x) = \int_{0}^{x} \sqrt{1 + 2t}\,dt$ (b) $g(x) = \int_{0}^{\sqrt{x}} \frac{\cos t}{t}\,dt$

3. Evaluate the indefinite integral: (12 points)

(a) $\displaystyle\int \frac{dx}{5-3x}$ (b) $\displaystyle\int x^2 \cos(1-x^3)\,dx$

4. Evaluate the definite integral: (16 points)

(a) $\displaystyle\int_0^2 (x-1)^{25}\,dx$ (b) $\displaystyle\int_e^{e^4} \frac{dx}{x\sqrt{\ln x}}$

5. Evaluate the indefinite integral: (16 points)

(a) $\int x \sin 4x \, dx$ (b) $\int \sin(\ln x) \, dx$

6. Evaluate the definite integral $\int_0^{1/2} \sin^{-1} x \, dx$. (10 points)

7. Evaluate the definite integral $\int_0^{\pi/2} \sin^5 t \, dt$. (10 points)

8. Evaluate the integral $\int \frac{x-1}{x^2+3x+2} \, dx$. (10 points)