**Calculus (ME 1C)** NAME ________________________

第三次小考 **Dec 30, 1996** 學號 ________________________

求以下函數的反導函數, 不定積分, 或定積分. 若遇到無法寫出反導函數的積分問題, 則寫出其

左黎曼和的通式. (**1–12** 每題五分, **13–16** 每題十分)

**1.** $f(x) = 5x - \sqrt{x}, \quad \text{for } x > 0$

**2.** $f(t) = t\cos t^2$

**3.** $r(x) = 3x^2\cos(x^3 + 7)$

**4.** $g(y) = e^2 + 2^y$

**5.** $\displaystyle\int_2^5 x^3 - \pi x^2\, dx$

**6.** $\displaystyle\int_{-1}^{e-2} \frac{1}{t+2}\, dt$

**7.** $\displaystyle\int \sqrt{\cos 3t}\,\sin 3t\, dt$

**8.** $\displaystyle\int \sin\theta(\cos\theta + 5)^7\, d\theta$

**9.** $\displaystyle\int_1^2 \frac{x^2+1}{x}\, dx$

**10.** $\displaystyle\int t\sin t\, dt$

**11.** $\displaystyle\int x\,\mathrm{arctan} x^2\, dx$

**12.** $\displaystyle\int \ln(x^2)\, dx$

**13.** $\displaystyle\int_{-\pi/4}^{\pi/4} \cos^2\theta\,\sin^5\theta\, d\theta$

**14.** $\displaystyle\int \frac{5x+6}{x^2+4}\, dx$

**15.** $\displaystyle\int e^x \sin x\, dx$

**16.** $\displaystyle\int_1^2 \frac{\sin t}{t}\, dt$

$\mu = 70.4$, $\sigma = 16.8$.

$$\{100, 100, 94, 90, 90, 90, 90, 90, 88\} \geq \mu + \sigma,$$

$$\{30, 35, 39, 40, 44, 45, 51, 52\} \leq \mu - \sigma.$$