

日期： 103 年 4 月 16 日

時間： 8:20 - 9:30

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分	

班級：

學號：

姓名：

1. Evaluate the indefinite integrals (30%)

(a) $\int x\sqrt{4-x} dx$

(b) $\int \frac{\ln \sqrt{x}}{x} dx$

(c) $\int \sin^5 \frac{x}{3} \cos \frac{x}{3} dx$

(d) $\int \frac{(t+1)^2 - 1}{t^4} dt$

(e) $\int e^x \cos(e^x - 7) dx$

(f) $\int \frac{dx}{2+(x-1)^2}$

2. Evaluate the integrals (20%)

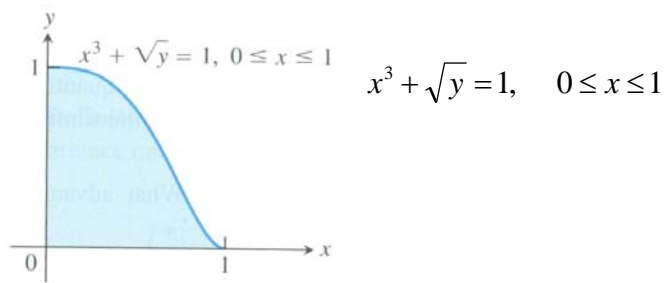
(a) $\int_0^\pi \frac{1}{2} (\cos x + |\cos x|) dx$

(b) $\int_0^\pi \tan^2 \frac{\theta}{3} d\theta$

(c) $\int_1^2 \frac{4}{v^2} dv$

(d) $\int_{-\ln 2}^0 e^{2w} dw$

3. Find the area of the shaded region below. (10%)



4. Find the volume of the solid generated by revolving the region bounded by $y = 4 - x^2$, and $y = 2 - x$ about the x-axis. (10%)

5. Find the length of the curve $y = \int_0^x \sqrt{\cos 2t} dt$ from $x = 0$ to $x = \pi/4$. (10%)

6. Find the area of the surface generated by revolving the curve $x = 2\sqrt{4-y}, 0 \leq y \leq \frac{15}{4}$ about the y-axis. (10%)

7. Solve the initial value problem, $\frac{ds}{dt} = 8 \sin^2(t + \frac{\pi}{12}), s(0) = 8$. (10%)