Name . . . . . .

Department . . . . . .

Whilst answering the test you may use the Formula Sheet and a university-approved calculator but please do NOT consult the Module or any book.

MODULE 9 Integration II

TEST 9.1

1. Find the following indefinite integrals

(a) $\int x\,(1+x^2)^5\,dx$

(b) $\int \sinh^4 x\,\cosh x\,dx$

2. Evaluate $\int_0^{\pi/2} \dfrac{\sin x}{1+\cos x}\,dx$

3. Use the substitution $u = \sqrt{x}$ to evaluate $\int_0^4 e^{\sqrt{x}}\, dx$

4. Find the magnitude of the area enclosed between the curve $y = \sqrt{x+4}$, the x-axis and the lines $x = 0$ and $x = 5$.

5. The area bounded by the curve $y = x(x-1)$, the x-axis and the lines $x = 0$ and $x = 1$ is rotated about the x-axis through one complete revolution.

(i) Find the volume of the solid of revolution.

(ii) Find the coordinates of the centre of gravity of this solid.