

## 231 Gateway 4 Practice Test - Integrals

No uses of Calculators; No Partial Credit. 30 minutes to finish test. More space will be provided on the actual test.

1. (10 pts) Find  $f(x)$  :  $f'(x) = e^x - \sin(x)$ ,  $f(0) = 1$ .

2. (20 pts) Find  $s(t)$  :  $s''(t) = -1$ ,  $s'(0) = 3$ ,  $s(0) = 7$ .

3. (10 pts) Evaluate :  $\int_0^1 (x^2 - 2x + 2) dx$ .

4. (10 pts) Evaluate :  $\int \left( \frac{1}{x^2} - \sqrt[3]{x} - \frac{2}{\sqrt{x}} + 3 \right) dx$ .

5. (10 pts) Evaluate :  $\int_1^e \left( \frac{3}{x} \right) dx$ .

6. (10 pts) Evaluate :  $\int_0^{\frac{\pi}{2}} 2 \cos(3\theta) d\theta$ .

7. (10 pts) Evaluate :  $\int 3x\sqrt{2-x^2} dx$ .

8. (10 pts) Evaluate :  $\int_0^{\frac{\pi}{3}} 2 \cos^2(x) \sin(x) dx$ .

9. (10 pts) Find  $F'(x)$  :  $F(x) = \int_0^x e^{-t^2} dt$ ,  $x > 0$ .