

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) Evaluate: $\int_{-2}^3 (x^2 - 2x + 2) dx$.

2. (10 pts) Find $s(t)$: $s''(t) = -1, s'(1) = 3, s(2) = 7$.

3. (10 pts) Evaluate: $\int \left(\frac{4}{5x^2} - 6\sqrt[3]{x} - \frac{1}{3\sqrt{x}} + 2 \right) dx$.

4. (10 pts) Evaluate: $\int \frac{2x^3 - 5\sqrt{x^3} + 7\sqrt{x}}{\sqrt[3]{x^2}} dx$.

5. (10 pts) Evaluate : $\int 2 \sec(3\theta) \tan(3\theta) d\theta$.

6. (10 pts) Evaluate : $\int_1^{\frac{2}{3}} 7x\sqrt{2-x^2} dx$.

7. (10 pts) Evaluate : $\int_{\frac{\pi}{6}}^{\frac{3\pi}{4}} 3 \cos^7(x) \sin(x) dx$.

8. (10 pts) Find $F'(x)$: $F(x) = \int_{\sin x}^0 \sqrt{t^2 - t + 2} dt$.

9. (20 pts) The figure below shows the areas of regions bounded by the graph of f and the x-axis. Evaluate the following integrals using the data from the graph.

i) $\int_a^c f(x) dx$

ii) $\int_d^b 3f(x) dx$

iii) $\int_a^d 2|f(x)| dx$

iv) $\int_b^e -4f(x) dx$

