

Names: _____

Group #: _____

Evaluate the following indefinite integrals. (*Remember: You can check your answer by differentiating.*)

1. $\int (5^x + 2\sqrt{x}) dx$

2. $\int \left(x + \frac{4}{x} - \frac{2}{x^3} + \frac{5}{\sqrt[3]{x}} \right) dx$

3. $\int \left(\sec(x) \tan(x) - \frac{1}{\cos^2(x)} + \pi^3 \right) dx$

4. $\int \frac{\cos x}{\sin^2(x)} dx$

5. $\int 3e^{3x} dx$

Solve the following initial value problems.

6. $f'(x) = 6x^2 - 8x + 5$; $f(0) = 4$

7. $\frac{dy}{dx} = \frac{4}{1+x^2}$; $y(1) = \frac{\pi}{2}$

8. $f''(x) = -\frac{1}{x^2}$; $f'(-1) = 3$; $f(-1) = 5$