

Name: _____

Show your work. Answers without work earn reduced or no credit.

1. [2 points] Find an antiderivative for the following functions.

(a) $f(x) = 3$

(c) $g(x) = x^{\ln(3)}$

(b) $f(t) = 4t - 2$

(d) $h(y) = y^2 + \frac{1}{y}$

2. [2 points] Find the following indefinite integrals.

(a) $\int (t^2 + 1)^2 dt$

(c) $\int 2e^{-r} dr$

(b) $\int \left(3x - \frac{1}{\sqrt{x}}\right) dx$

(d) $\int (e^{3y} - 1) dy$

3. [2 parts, 2 points each] Find the following indefinite integrals.

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

(b) $\int te^{3t^2} dt$

4. [2 points] Use the Fundamental Theorem of Calculus to evaluate the definite integral $\int_1^2 \frac{1}{\sqrt{t+2}} dt$ exactly.