



3. (a) Find the most general antiderivative for  $r(x) = \frac{1}{x}$ .
- (b) A peer guesses that  $Q(x) = \frac{\ln|3x|}{3} + C$  is the most general antiderivative of  $q(x) = \frac{1}{3x}$ . Are they correct? Explain.
- (c) Now help your peer find the most general antiderivative of  $p(x) = \frac{1}{3x+2}$ . Verify your answer.
4. (a) Find the most general antiderivative for  $j(s) = \sqrt[3]{s}$ .
- (b) A peer guesses that  $K(s) = \frac{3}{4}(2s)^{4/3} + C$  is the most general antiderivative of  $k(s) = \sqrt[3]{2s}$ . Are they correct? Explain.
- (c) Now help your peer find the most general antiderivative of  $\ell(s) = \frac{1}{\sqrt[3]{2s}}$ . Verify your answer.

**Take Aways from Part 1:**

What did all of the functions in part (c) of the first four problems have in common?

Describe your strategy for finding the most general antiderivatives for these types of functions.

How can you verify your antiderivative is correct?

**Part 2: Indefinite Integrals**

For each of the following integrals, do the following:

- (i) Guess the antiderivative.
- (ii) Verify your guess.
- (iii) If your guess in part (i) was incorrect, revise your guess and verify again.

5. (a)  $\int \frac{1}{3s} ds$

Guess:

Verify:

Revised Guess:

Verify:

(b)  $\int \frac{2}{3s+5} ds$

Guess:

Verify:

Revised Guess:

Verify:

6. (a)  $\int \frac{1}{e^x} dx$

Guess:

Verify:

Revised Guess:

Verify:

(b)  $\int \frac{1}{e^{3x+1}} dx$

Guess:

Verify:

Revised Guess:

Verify:

7. (a)  $\int \frac{1}{\sqrt{t}} dt$

Guess:

Verify:

Revised Guess:

Verify:

(b)  $\int \frac{4}{\sqrt{3t+5}} dt$

Guess:

Verify:

Revised Guess:

Verify:

Names: \_\_\_\_\_  
\_\_\_\_\_

### Exit Ticket

1. (a) Use the guess and verify technique to evaluate  $\int \frac{1}{2x} dx$ .

(b) Evaluate  $\frac{1}{2} \int \frac{1}{x} dx$ .

(c) The answers to parts (a) and (b) are the same. Explain.

2. Does  $\int x dt = \int t dt$ ? Explain.