Objective: **Evaluate a definite integral using the Fundamental Theorem of Calculus**

Use the Fundamental Theorem of Calculus to evaluate the following definite integral.

$$\int_1^2 \frac{1}{x^2} - \frac{1}{x^3}\, dx$$

ANSWER:

$$\int_1^2 \frac{1}{x^2} - \frac{1}{x^3}\, dx = \int_1^2 x^{-2} - x^{-3}\, dx$$

$$= \left[\frac{x^{-1}}{-1} - \frac{x^{-2}}{-2}\right]_1^2$$

$$= \left[-\frac{1}{x} + \frac{1}{2x^2}\right]_1^2$$

$$= \left(-\frac{1}{2} + \frac{1}{8}\right) - \left(-1 + \frac{1}{2}\right)$$

$$= \frac{1}{8}$$