

## Practice Daily Quiz 12

Evaluate each indefinite integral.

$$1) \int (x^5 + 3)^3 \cdot 5x^4 dx \quad u = x^5 + 3$$

$$du = 5x^4 dx$$

$$\int u^3 du$$

$$\frac{1}{4} (x^5 + 3)^4 + C$$

$$2) \int -\frac{2x}{x^2 + 3} dx$$

$$u = x^2 + 3$$

$$du = 2x dx$$

$$-\int \frac{1}{u} du$$

$$-\ln(x^2 + 3) + C$$

$$3) \int 6e^{2x} \sec(e^{2x} - 5) \tan(e^{2x} - 5) dx$$

$$u = e^{2x} - 5$$

$$du = 2e^{2x} dx$$

$$\frac{6}{2} \int \sec u \tan u du \quad \frac{1}{2} du = e^{2x} dx$$

$$3 \sec(e^{2x} - 5) + C$$

Evaluate each definite integral.

$$4) \int_{-2}^0 \frac{12x}{(2x^2 + 4)^2} dx$$

$$u = 2x^2 + 4$$

$$du = 4x dx \rightarrow \frac{1}{4} du = x dx$$

$$u(0) = 4$$

$$u(-2) = 2(4) + 4 = 12$$

$$\frac{12}{4} \int_{12}^4 \frac{1}{u^2} du$$

$$-3 \int_{12}^4 \frac{1}{u^2} du$$

$$-3u^{-2} \rightarrow \frac{-3u^{-1}}{-1}$$

$$\frac{3}{u} \Big|_4^{12}$$

$$\frac{3}{12} - \frac{3}{4} = \frac{1}{4} - \frac{3}{4} = \left(-\frac{1}{2}\right)$$