

$$6. \int \underline{x} (\underline{7x^2 - 2})^3 \underline{dx}$$

$$u = \underline{7x^2 - 2} \quad du = (\underline{14x}) \underline{dx}$$

$$= \frac{1}{14} \int \underline{14x} (\underline{7x^2 - 2})^3 \underline{dx}$$

$$= \frac{1}{14} \int u^3 du$$

$$= \frac{1}{14} \cdot \frac{u^4}{4} + C$$

$$= \left(\frac{1}{56} (7x^2 - 2)^4 + C \right)$$

$$8. \int (3x^2 + 6x)^{10} (x+1) dx$$

$$u = \underline{3x^2 + 6x} \quad du = (6x + 6) dx$$

$$du = \underline{6(x+1)} \underline{dx}$$

$$= \int \underline{6} (\underline{3x^2 + 6x})^{10} (\underline{x+1}) \underline{dx}$$

$$= \int u^{10} du$$

$$= \frac{u^{11}}{11} + C$$

$$= \left(\frac{1}{11} (3x^2 + 6x)^{11} + C \right)$$

$$7. \int \frac{\underline{x^3}}{(\underline{x^4 - 3})^5} \underline{dx}$$

$$u = \underline{x^4 - 3} \quad du = \underline{4x^3} \underline{dx}$$

$$= \frac{1}{4} \int \frac{\underline{4x^3}}{(\underline{x^4 - 3})^5} \underline{dx}$$

$$= \frac{1}{4} \int \frac{1}{u^5} du$$

$$= \frac{1}{4} \int u^{-5} du$$

$$= \frac{1}{4} \cdot \frac{u^{-5+1}}{-5+1} + C$$

$$= \frac{1}{4} \cdot \frac{u^{-4}}{-4} + C$$

$$= \frac{u^{-4}}{-16} + C$$

$$= \frac{1}{-16u^4} + C$$

$$= \left(\frac{1}{-16(x^4 - 3)^4} + C \right)$$