

Gr. Power Rule

Gr. F:

$$\int [f(x)]^n \cdot f'(x) dx$$

$$= \frac{[f(x)]^{n+1}}{n+1} + C.$$

Exmp 1: $\int (5x^2 + 8)^4 \cdot 10x dx$

$$= \frac{(5x^2 + 8)^{4+1}}{4+1} + C$$

$$= \frac{1}{5} (5x^2 + 8)^5 + C$$

14.8

Sub. M

$$\int x^4 (2x^5 - 5)^4 dx$$

$$= \int (2x^5 - 5)^4 \cdot x^4 dx$$

$$\text{let } u = 2x^5 - 5$$

$$\frac{du}{dx} = 10x^4$$

$$du = 10x^4 dx$$

$$\frac{1}{10} du = x^4 dx$$

$$= \int u^4 \cdot \frac{1}{10} du$$

$$= \frac{1}{10} \int u^4 du$$

$$= \frac{1}{10} \cdot \frac{u^5}{5} + C$$

$$= \frac{1}{50} (2x^5 - 5)^5 + C.$$