



SECTION 5.5 U-SUBSTITUTION

○ Review: $\frac{d}{dx} \left[\frac{1}{4} (x^2 + 5)^4 \right] =$

$$\int (x^2 + 5)^3 (2x) dx =$$



- A process used to reverse the chain rule is called “U-substitution”.

$$\int (x^2 + 5)^3 (2x) dx =$$



EXAMPLES

$$\int (x^2 - 8)^4 (x) dx =$$



TRY: $\int \sqrt{5x + 2} dx =$



EXAMPLES

$$\int 4 \cos(4x) dx =$$

$$\int \sin^3 x \cos x dx =$$



What would you let $u =$ in the following examples?

$$\int 3(3x - 1)^4 dx$$

$$u = 3x - 1$$

$$\int (2x + 1)(x^2 + x) dx$$

$$u = x^2 + x$$

$$\int 3x^2 \sqrt{x^3 - 2} dx$$

$$u = x^3 - 2$$

$$\int \frac{-4x}{(1 - 2x^2)} dx$$

$$u = 1 - 2x^2$$

$$\int \cos^2 x \sin x dx$$

$$u = \cos x$$



HERE'S A TRICKY ONE:

$$\int x\sqrt{5x+2}dx$$

Practice: p.366 #7-31 odd

