

FIND $f(x)$

Ex: $f'(x) = 2x + 7$ $f(2) = 0$ CONDITION - USE THIS TO FIND "C"

$$\int f'(x) dx = \int 2x + 7 dx$$

$$f(x) = x^2 + 7x + C$$

$$0 = 2^2 + 7(2) + C$$

$$0 = 18 + C$$

$$C = -18$$

$$f(x) = x^2 + 7x - 18$$

Ex: $f''(x) = \frac{2}{x^3}$ $f'(1) = 1$
 $f(1) = 1$

$$f' = \int \frac{2}{x^3} dx$$

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

$$f' = -1x^{-2} + C_1$$

$$1 = -1(1)^{-2} + C_1$$

$$1 = -1 + C_1$$

$$2 = C_1$$

$$f' = -x^{-2} + 2$$

$$f = \int -x^{-2} + 2 dx$$

$$f = x^{-1} + 2x + C_2$$

$$1 = 1 + 2 + C_2$$

$$C_2 = -2$$

$$f(x) = \frac{1}{x} + 2x - 2$$