

2/2/16

Why indefinite?

indefinite: not clearly expressed or defined, vague  
 → because of the " + c "

$\frac{1}{3}x^3 \rightarrow$  an antiderivative of  $x^2$

the + c creates a family of functions of which  $x^2$  is a derivative

## Rules of Integration

$$\int 0 dx = C$$

subderiv. of constant = 0 and  $\frac{d}{dx}(C) = 0$

$$\int k dx = kx + C$$

$\frac{d}{dx}(kx) = k$  or  $\frac{d}{dx}(kx + C) = k$

$$\int k(f(x)) dx = k \int f(x) dx$$

constant out of integral

$$\int f(x) \pm g(x) dx = \int f(x) dx \pm \int g(x) dx$$

Indefinite Integral Power Rule

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C \quad (n \neq -1)$$

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doesn't work for  $x^{-1}$ ,  $\frac{1}{x}$

→  $\frac{1}{x}$  is der. of  $\ln x$

\* Indefinite Integral Quiz Schedule \*

wednesday - Polynomials

$$\int x^2 \cdot x^{\frac{1}{2}} = \int x^{\frac{5}{2}} = \frac{2}{7} x^{\frac{7}{2}}$$

$$\int x^2 \cdot x^2 + x^{\frac{3}{2}} + x^{\frac{1}{2}} = \int x^4 + x^{\frac{3}{2}} + x^{\frac{1}{2}} = \frac{1}{5} x^5 + \frac{2}{7} x^{\frac{7}{2}} + \frac{2}{3} x^{\frac{3}{2}}$$