

### Chapter 4 Integral Rules and Formulas

#### Power Rule (Integrals)

$$\int u^n du = \frac{u^{n+1}}{n+1} + C$$

#### Power Rule (Derivatives)

$$\frac{d}{dx} u^n = nu^{n-1} * u'$$

#### Average Value Theorem

$$f(c) = \frac{1}{b-a} \int_a^b f(x) dx$$

#### Trig Derivatives Rule

$$13. \frac{d}{dx} [\sin u] = (\cos u)u'$$

$$14. \frac{d}{dx} [\cos u] = -(\sin u)u'$$

$$15. \frac{d}{dx} [\tan u] = (\sec^2 u)u'$$

$$16. \frac{d}{dx} [\cot u] = -(\csc^2 u)u'$$

$$17. \frac{d}{dx} [\sec u] = (\sec u \tan u)u'$$

$$18. \frac{d}{dx} [\csc u] = -(\csc u \cot u)u'$$

#### Trig Integral Rules

$$1) \int \sin u du = -\cos u + C$$

$$2) \int \cos u du = \sin u + C$$

$$3) \int \sec^2 u du = \tan u + C$$

$$4) \int \csc^2 u du = -\cot u + C$$

$$5) \int \sec u \tan u du = \sec u + C$$

$$6) \int \csc u \cot u du = -\csc u + C$$

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