



Problem Set 35: The Fundamental Theorem of Calculus

Evaluate the following expressions using the Fundamental Theorem of Calculus.

1. $\frac{d}{dx} \int_{-2}^x \sqrt{t} \, dt$

2. $\frac{d}{dx} \int_1^x (t^2 - 4t + 7) \, dt$

3. $\frac{d}{du} \int_u^0 (3 - v) \, dv$

4. $\frac{d}{dr} \int_0^{-r} s^{2/3} \, ds$

AP Calculus AB – Unit 5

Dan the Tutor



Learn by Doing

$$5. \frac{d}{dr} \int_0^{\sin(r)} \sec(t) dt$$

$$6. \frac{d}{dx} \int_{e^{3x}}^1 (t^2 - 2)^3 dt$$

$$7. \frac{d}{dx} \int_{x-1}^{3x+5} \sqrt[3]{t} dt$$

$$8. \frac{d}{dy} \int_{\sqrt{y}}^{\ln y} 6z dz$$