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Indefinite Integrals & the Net Change Thm

Indefinite Integral.

$$\int f(x) dx = F(x) \quad \text{means} \quad F' = f.$$

Ex 1: $\int -\csc^2 x dx$

refer to the table in the book.

Ex 2: $\int \left(2x - \frac{1}{x} + \frac{1}{\sqrt{1-x^2}} \right) dx$

Ex 3: $\int \frac{\sin \theta}{\cos^2 \theta} d\theta$

Ex 4: $\int_1^4 \frac{1 + \sqrt[3]{x}}{\sqrt{x}} dx$

The Net Change Thm: The integral of a ROC is the net change.

Ex 5: If $f(x)$ is the slope of a trail at a distance of x mi from the start of the trail, what does $\int_3^5 f(x) dx$

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Ex 6: The velocity of a car was read from its speedometer & recorded. Use the midpoint rule to estimate the distance travelled.

t(s)	0	10	20	30	40	50	60	70	80	90	100
v(mi/hr)	0	38	52	58	55	51	32	53	50	47	45

Ex 7:

