

Watch. Practice. Understand. | Lesson 299

Calculus Section 5.4 Part 1 Indefinite Integrals and Net Change Theorem

Watch the matching video: <https://www.youtube.com/watch?v=Sbz4HqKpUo8>

Practice focus: Basic integration and net change

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Find an antiderivative of $6x^2 - 4x + 3$.

02 Evaluate the integral of $2x$ from 0 to 3.

03 Find the indefinite integral of $1/x$ for $x \neq 0$.

04 A quantity starts at 10 and changes at rate $r(t) = 2t$ for $0 \leq t \leq 3$. Find its final value.

Worked answers | Lesson 299

Calculus Section 5.4 Part 1 Indefinite Integrals and Net Change Theorem

Watch the matching video: <https://www.youtube.com/watch?v=Sbz4HQPJ08>

Practice focus: Basic integration and net change

Original extra practice matched to the listed lesson topic.

01 Find an antiderivative of $6x^2-4x+3$.

Integrate termwise: $2x^3-2x^2+3x+C$. Differentiating recovers the integrand.

02 Evaluate the integral of $2x$ from 0 to 3.

Antiderivative x^2 ; endpoint difference $9-0=9$.

03 Find the indefinite integral of $1/x$ for $x \neq 0$.

$\ln|x|+C$ on an interval not crossing 0.

04 A quantity starts at 10 and changes at rate $r(t)=2t$ for $0 \leq t \leq 3$. Find its final value.

$10 + \text{integral from 0 to 3 of } 2t \, dt = 10+9=19$.