

The Secret Strategies Revealed For Studying The Upcoming Calculus Final

Lesson 315 | Calculus AB | Derivative definition and basic rules • Basic integration and net change • Area between curves

<https://www.youtube.com/watch?v=BxyRji556Ec>

Related review: exact coverage needs teacher confirmation.

Name: _____ Date: _____ Show your reasoning.

01

Differentiate $f(x)=3\cdot x^7 + 8\cdot x - 13$ on the interior of its real domain.

02

Find an antiderivative of $4\cdot x^6 + 3$.

03

Find the area between $y=9x$ and $y=x^2$ from $x=0$ to their other intersection.

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Name: _____ Date: _____ Show your reasoning.

04

Differentiate $f(x)=5\cdot x^3 + 4\cdot x - 10$ on the interior of its real domain.

05

Find an antiderivative of $14\cdot x^4 + 8$.

06

Find the area between $y=22x$ and $y=x^2$ from $x=0$ to their other intersection.

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01

Differentiate $f(x)=3\cdot x^7 + 8\cdot x - 13$ on the interior of its real domain.

Apply the power rule term by term. $f'(x)=21\cdot x^6 + 8$.

02

Find an antiderivative of $4\cdot x^6 + 3$.

Integrate each power using $\int x^p dx = x^{(p+1)}/(p+1)$. An antiderivative is $x\cdot(4\cdot x^6 + 21)/7 + C$. Differentiate to check.

03

Find the area between $y=9x$ and $y=x^2$ from $x=0$ to their other intersection.

Intersections solve $x(x-9)=0$, so $x=0,9$. Line is above parabola there.

$A = \int [0,9] (9x - x^2) dx = [9x^2/2 - x^3/3]_0^9 = 243/2$.

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04

Differentiate $f(x)=5\cdot x^3 + 4\cdot x - 10$ on the interior of its real domain.

Apply the power rule term by term. $f'(x)=15\cdot x^2 + 4$.

05

Find an antiderivative of $14\cdot x^4 + 8$.

Integrate each power using $\int x^p dx = x^{(p+1)}/(p+1)$. An antiderivative is $14\cdot x^5/5 + 8\cdot x + C$. Differentiate to check.

06

Find the area between $y=22x$ and $y=x^2$ from $x=0$ to their other intersection.

Intersections solve $x(x-22)=0$, so $x=0,22$. Line is above parabola there.

$A = \int [0,22] (22x - x^2) dx = [22x^2/2 - x^3/3]_0^{22} = 5324/3$.