

2022 Calculus BC Finding Arc Length with Integration (Rokawski 's Calculus 8.1)

Lesson 322 | Calculus BC | Arc length of curves

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

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Find the arc length of $y=8x+13$ on $0 \leq x \leq 4$, using an integral.

02

Find the arc length of $y=14x+9$ on $0 \leq x \leq 2$, using an integral.

03

Find the arc length of $y=10x+12$ on $0 \leq x \leq 7$, using an integral.

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04

Find the arc length of $y=5x+4$ on $0 \leq x \leq 3$, using an integral.

05

Find the arc length of $y=10x+12$ on $0 \leq x \leq 2$, using an integral.

06

Find the arc length of $y=5x+7$ on $0 \leq x \leq 2$, using an integral.

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01

Find the arc length of $y=8x+13$ on $0 \leq x \leq 4$, using an integral.

$y'=8$. $L=\int[0,4]\sqrt{1+64}dx=4\sqrt{65}$. It agrees with the straight-line distance between endpoints.

02

Find the arc length of $y=14x+9$ on $0 \leq x \leq 2$, using an integral.

$y'=14$. $L=\int[0,2]\sqrt{1+196}dx=2\sqrt{197}$. It agrees with the straight-line distance between endpoints.

03

Find the arc length of $y=10x+12$ on $0 \leq x \leq 7$, using an integral.

$y'=10$. $L=\int[0,7]\sqrt{1+100}dx=7\sqrt{101}$. It agrees with the straight-line distance between endpoints.

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04

Find the arc length of $y=5x+4$ on $0 \leq x \leq 3$, using an integral.

$y'=5$. $L=\int[0,3]\sqrt{(1+25)}dx=3\sqrt{26}$. It agrees with the straight-line distance between endpoints.

05

Find the arc length of $y=10x+12$ on $0 \leq x \leq 2$, using an integral.

$y'=10$. $L=\int[0,2]\sqrt{(1+100)}dx=2\sqrt{101}$. It agrees with the straight-line distance between endpoints.

06

Find the arc length of $y=5x+7$ on $0 \leq x \leq 2$, using an integral.

$y'=5$. $L=\int[0,2]\sqrt{(1+25)}dx=2\sqrt{26}$. It agrees with the straight-line distance between endpoints.