

Calculus BC Surface Area with Revolution (Rogawski 8.1)

Lesson 323 | Calculus BC | Surface area of revolution

https://www.youtube.com/watch?v=_Bzqx0cE0L4

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Rotate $y=7x+14$, $0 \leq x \leq 2$, about the x-axis. Find the lateral surface area using integration.

02

Rotate $y=7x+10$, $0 \leq x \leq 4$, about the x-axis. Find the lateral surface area using integration.

03

Rotate $y=10x+13$, $0 \leq x \leq 3$, about the x-axis. Find the lateral surface area using integration.

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04

Rotate $y=10x+9$, $0 \leq x \leq 5$, about the x-axis. Find the lateral surface area using integration.

05

Rotate $y=2x+9$, $0 \leq x \leq 7$, about the x-axis. Find the lateral surface area using integration.

06

Rotate $y=14x+5$, $0 \leq x \leq 7$, about the x-axis. Find the lateral surface area using integration.

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01

Rotate $y=7x+14$, $0 \leq x \leq 2$, about the x-axis. Find the lateral surface area using integration.

$y > 0$ and $y' = 7$. $S = 2\pi \int_{[0,2]} (7x+14)\sqrt{1+49} dx = 84\pi\sqrt{50}$. End disks are not included.

02

Rotate $y=7x+10$, $0 \leq x \leq 4$, about the x-axis. Find the lateral surface area using integration.

$y > 0$ and $y' = 7$. $S = 2\pi \int_{[0,4]} (7x+10)\sqrt{1+49} dx = 192\pi\sqrt{50}$. End disks are not included.

03

Rotate $y=10x+13$, $0 \leq x \leq 3$, about the x-axis. Find the lateral surface area using integration.

$y > 0$ and $y' = 10$. $S = 2\pi \int_{[0,3]} (10x+13)\sqrt{1+100} dx = 168\pi\sqrt{101}$. End disks are not included.

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04

Rotate $y=10x+9$, $0 \leq x \leq 5$, about the x-axis. Find the lateral surface area using integration.

$y > 0$ and $y' = 10$. $S = 2\pi \int_{[0,5]} (10x+9)\sqrt{1+100} dx = 340\pi\sqrt{101}$. End disks are not included.

05

Rotate $y=2x+9$, $0 \leq x \leq 7$, about the x-axis. Find the lateral surface area using integration.

$y > 0$ and $y' = 2$. $S = 2\pi \int_{[0,7]} (2x+9)\sqrt{1+4} dx = 224\pi\sqrt{5}$. End disks are not included.

06

Rotate $y=14x+5$, $0 \leq x \leq 7$, about the x-axis. Find the lateral surface area using integration.

$y > 0$ and $y' = 14$. $S = 2\pi \int_{[0,7]} (14x+5)\sqrt{1+196} dx = 756\pi\sqrt{197}$. End disks are not included.