

2021 In Depth Related Rates (James Steward Section 3.9)

Lesson 277 | Calculus AB | Related rates

<https://www.youtube.com/watch?v=JNV3TPtCNWY>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

A sphere radius increases at 5 cm/s. At radius 10 cm, find dV/dt .

02

A sphere radius increases at 13 cm/s. At radius 12 cm, find dV/dt .

03

A sphere radius increases at 9 cm/s. At radius 8 cm, find dV/dt .

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04

A sphere radius increases at 14 cm/s. At radius 8 cm, find dV/dt .

05

A sphere radius increases at 8 cm/s. At radius 11 cm, find dV/dt .

06

A sphere radius increases at 13 cm/s. At radius 10 cm, find dV/dt .

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01

A sphere radius increases at 5 cm/s. At radius 10 cm, find dV/dt .

$V = (4/3)\pi r^3$. Differentiate in time: $dV/dt = 4\pi r^2 dr/dt$. Substitute after differentiation: 2000π cm³/s.

02

A sphere radius increases at 13 cm/s. At radius 12 cm, find dV/dt .

$V = (4/3)\pi r^3$. Differentiate in time: $dV/dt = 4\pi r^2 dr/dt$. Substitute after differentiation: 7488π cm³/s.

03

A sphere radius increases at 9 cm/s. At radius 8 cm, find dV/dt .

$V = (4/3)\pi r^3$. Differentiate in time: $dV/dt = 4\pi r^2 dr/dt$. Substitute after differentiation: 2304π cm³/s.

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04

A sphere radius increases at 14 cm/s. At radius 8 cm, find dV/dt .

$V = (4/3)\pi r^3$. Differentiate in time: $dV/dt = 4\pi r^2 dr/dt$. Substitute after differentiation: 3584π cm³/s.

05

A sphere radius increases at 8 cm/s. At radius 11 cm, find dV/dt .

$V = (4/3)\pi r^3$. Differentiate in time: $dV/dt = 4\pi r^2 dr/dt$. Substitute after differentiation: 3872π cm³/s.

06

A sphere radius increases at 13 cm/s. At radius 10 cm, find dV/dt .

$V = (4/3)\pi r^3$. Differentiate in time: $dV/dt = 4\pi r^2 dr/dt$. Substitute after differentiation: 5200π cm³/s.