

Integrating By Separating Variables, Calculus AB Integration Technique, Differential Equati...

Lesson 317 | Calculus BC | Separable differential equations and slope fields

<https://www.youtube.com/watch?v=gQwy2D2bfiM>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Solve $dy/dx=9y$ with $y(0)=6$. Give the initial slope and explain the sign of the solution.

02

Solve $dy/dx=14y$ with $y(0)=13$. Give the initial slope and explain the sign of the solution.

03

Solve $dy/dx=3y$ with $y(0)=4$. Give the initial slope and explain the sign of the solution.

Integrating By Separating Variables, Calculus AB Integration Technique, Differential Equati...

Lesson 317 | Calculus BC | Separable differential equations and slope fields

<https://www.youtube.com/watch?v=gQwy2D2bfiM>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

04

Solve $dy/dx=7y$ with $y(0)=3$. Give the initial slope and explain the sign of the solution.

05

Solve $dy/dx=4y$ with $y(0)=12$. Give the initial slope and explain the sign of the solution.

06

Solve $dy/dx=10y$ with $y(0)=12$. Give the initial slope and explain the sign of the solution.

Integrating By Separating Variables, Calculus AB Integration Technique, Differential Equati...

Lesson 317 | Calculus BC | Separable differential equations and slope fields

<https://www.youtube.com/watch?v=gQwy2D2bfiM>

Original practice aligned to the saved video title.

01

Solve $dy/dx=9y$ with $y(0)=6$. Give the initial slope and explain the sign of the solution.

Separate $dy/y=9dx$. Integrate $\ln|y|=9x+C$; use initial condition: $y=6e^{(9x)}$. Initial slope=54. Exponential and 6 are positive, so $y>0$ for all x .

02

Solve $dy/dx=14y$ with $y(0)=13$. Give the initial slope and explain the sign of the solution.

Separate $dy/y=14dx$. Integrate $\ln|y|=14x+C$; use initial condition: $y=13e^{(14x)}$. Initial slope=182. Exponential and 13 are positive, so $y>0$ for all x .

03

Solve $dy/dx=3y$ with $y(0)=4$. Give the initial slope and explain the sign of the solution.

Separate $dy/y=3dx$. Integrate $\ln|y|=3x+C$; use initial condition: $y=4e^{(3x)}$. Initial slope=12. Exponential and 4 are positive, so $y>0$ for all x .

Integrating By Separating Variables, Calculus AB Integration Technique, Differential Equati...

Lesson 317 | Calculus BC | Separable differential equations and slope fields

<https://www.youtube.com/watch?v=gQwy2D2bfiM>

Original practice aligned to the saved video title.

04

Solve $dy/dx=7y$ with $y(0)=3$. Give the initial slope and explain the sign of the solution.

Separate $dy/y=7dx$. Integrate $\ln|y|=7x+C$; use initial condition: $y=3e^{(7x)}$. Initial slope=21. Exponential and 3 are positive, so $y>0$ for all x .

05

Solve $dy/dx=4y$ with $y(0)=12$. Give the initial slope and explain the sign of the solution.

Separate $dy/y=4dx$. Integrate $\ln|y|=4x+C$; use initial condition: $y=12e^{(4x)}$. Initial slope=48. Exponential and 12 are positive, so $y>0$ for all x .

06

Solve $dy/dx=10y$ with $y(0)=12$. Give the initial slope and explain the sign of the solution.

Separate $dy/y=10dx$. Integrate $\ln|y|=10x+C$; use initial condition: $y=12e^{(10x)}$. Initial slope=120. Exponential and 12 are positive, so $y>0$ for all x .