

7.7 Separation of Variables (Particular Solutions)

Calculus

Name: _____

CA #1

For each differential equation, find the solution that passes through the given initial condition.

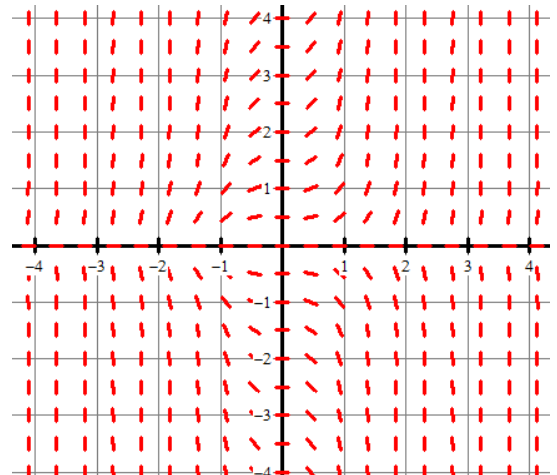
1. $\frac{dy}{dx} = e^{x+y}$ with initial condition $y(0) = -\ln 3$

2. $\frac{dy}{dx} = y \sec^2 x$ and $y = 2$ when $x = 0$.

3. $\frac{dy}{dx} = \frac{x^3-2}{y}$ with initial condition $y(2) = -4$

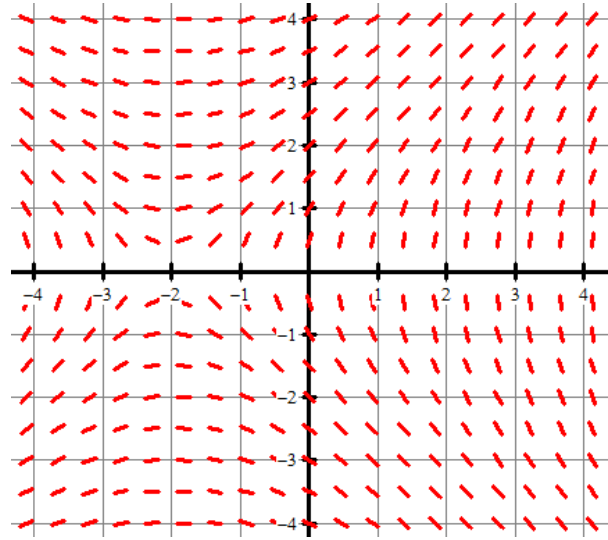
4. $\frac{dy}{dx} = 2x^2y$ and $y = 1$ when $x = 3$.

5. The slope field of $\frac{dy}{dx} = 2x^2y$ from question #4 is shown below. Draw the particular solution $y = f(x)$ when $f(3) = 1$ that you found in question #4 on the slope field.



6. Solve the differential equation $\frac{dy}{dx} = \frac{x+2}{y}$ for the particular solution $y = f(x)$ when $f(-2) = -3$.

7. The slope field of $\frac{dy}{dx} = \frac{x+2}{y}$ from question #6 is shown below. Draw the particular solution $y = f(x)$ when $f(-2) = -3$ that you found in question #6 on the slope field.



Answers to 7.7 CA #1

1. $y = -\ln(-e^x + 4)$	2. $y = 2e^{\tan x}$	3. $y = -\sqrt{\frac{1}{2}x^4 - 4x + 16}$	4. $y = e^{\frac{2}{3}x^3 - 18}$
<p>5.</p>	<p>6. $y = -\sqrt{x^2 + 4x + 13}$</p>	<p>7.</p>	