

7.2 Verifying Solutions for Differential Equations

Calculus

Name: _____

CA #2

For each differential equation, find the particular solution that passes through the given point.

1. $\frac{dy}{dx} = \frac{4}{5-2x} - 10x$; $(2, 3)$

2. $\frac{dy}{dx} = \cos(-x)$; $(\frac{\pi}{6}, -\frac{1}{2})$

3. $\frac{dy}{dx} = 12e^{4x-1} - \frac{1}{x^2}$; $(\frac{1}{4}, 8)$

4. $\frac{d^2y}{dx^2} = \cos(5x)$ and $y'(\frac{\pi}{5}) = 3$ and $y(\frac{3\pi}{10}) = 0$

5. $\frac{d^2y}{dx^2} = \frac{1}{x^3} + x$ and $y'(1) = 2$ and $y(-2) = -\frac{7}{12}$

6. For what value of k , if any, will $y = ke^{-3x} - 2 \sin(4x)$ be a solution to the differential equation $y'' + 16y = -75e^{-3x}$?

7. For what value of k , if any, is $y = e^{-2x} + ke^{5x}$ a solution to the differential equation $2y' + y'' = 15e^{5x}$?

Answers to 7.2 CA #2

1. $y = -2 \ln 5 - 2x - 5x^2 + 23$	2. $y = -\sin(-x) - 1$	3. $y = 3e^{4x-1} + \frac{1}{x} + 1$	
4. $y = -\frac{1}{25} \cos(5x) + 3x - \frac{9\pi}{10}$	5. $y = \frac{1}{2x} + \frac{1}{6}x^3 + 2x + 5$	6. $k = -3$	7. $k = \frac{3}{7}$