Do Now

Write the equations for the tangent line and the normal line to the graph of $y^2 - 4x^2 = 5$ at the point $(-1, 3)$.

$2y\,dy/dx - 8x = 0$

$\frac{2y\,dy/dx}{2y} = \frac{8x}{2y} \rightarrow \frac{8(-1)}{2(3)} \rightarrow -8/6 \rightarrow -4/3$

Tangent line: $y - 3 = -4/3(x+1)$

Normal line: $y - 3 = 3/4(x+1)$

Nov 13-8:08 AM

11/13/19

HW Solutions

Find dy/dx by implicit differentiation.

1. $8x^2 + y^2 = 10$

$16x + 2y\frac{dy}{dx} = 0$

$\frac{dy}{dx} = -\frac{16x}{2y} = -\frac{8x}{y}$

2. $x^4 + y^4 = 3$

$4x^3 + 4y^3\frac{dy}{dx} = 0$

$\frac{dy}{dx} = -\frac{4x^3}{4y^3} = -\frac{x^3}{y^3}$

3. $\sqrt{x} + \sqrt{y} = 100$

$\frac{1}{2\sqrt{x}} + \frac{1}{2\sqrt{y}}\frac{dy}{dx} = 0$

$\frac{dy}{dx} = -\frac{1}{2\sqrt{x}} \cdot 2\sqrt{y} = -\frac{\sqrt{y}}{\sqrt{x}}$

$\frac{dy}{dx} = -\sqrt{\frac{y}{x}}$

4. $5x^2 - xy - 4y^2 = 0$

$10x - x\frac{dy}{dx} - y - 8y\frac{dy}{dx} = 0$

$\frac{-10x+y}{-x-8y} = \frac{dy}{dx}$

$\frac{dy}{dx} = \frac{10x-y}{x+8y}$

Nov 12-2:08 PM

$x^3 - xy + y^2 = 5$

$3x^2 - (x\,dy/dx + y(1)) + 2y\,dy/dx = 0$

$3x^2 - x\,dy/dx - y + 2y\,dy/dx = 0$

$\frac{dy/dx(-x+2y)}{-x+2y} = \frac{-3x^2+y}{-x+2y}$

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Circuit Activity

Jillian	Jonah	Noah	Aleena
Anna	Chloe	Phillip	Guilianna
Aram	Antonio	Sarah	Josh
Lara		Ryan	Justin
Jesse	John	Lauren	Gabriella
Lydia	Bella	Jocelyn	Tom
Dion	Oliver	Ruby	Shervin
Sydney	Charlotte		

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Find $\frac{dy}{dx}$ given that $y^3 + 5y^2 - 5y - x^2 = -4$

Nov 12-8:19 AM

Find $\frac{dy}{dx}$ for $(x-y)^2 + y = 6$ at $(0, 2)$

$2(x-y)(1 - dy/dx) + dy/dx = 0$

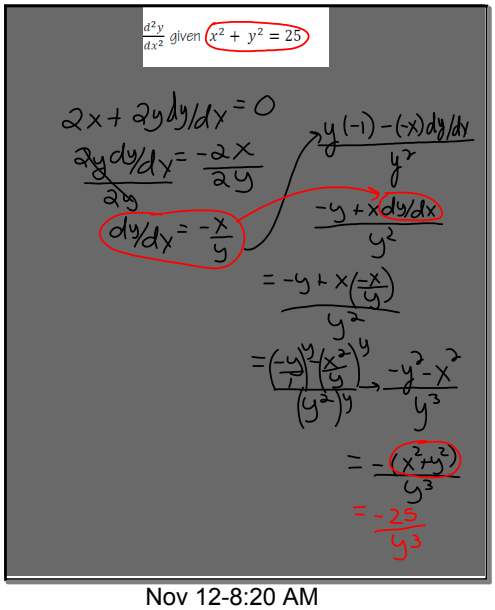
$2(0-2)(1 - dy/dx) + dy/dx = 0$

$-4(1 - dy/dx) + dy/dx = 0$

$-4 + 4\,dy/dx + dy/dx = 0$

$\frac{5\,dy/dx}{5} = \frac{4}{5}$ $dy/dx = 4/5$

Nov 12-8:20 AM



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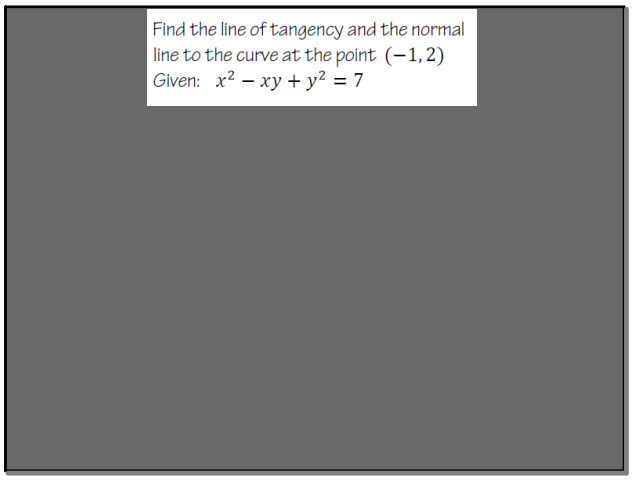

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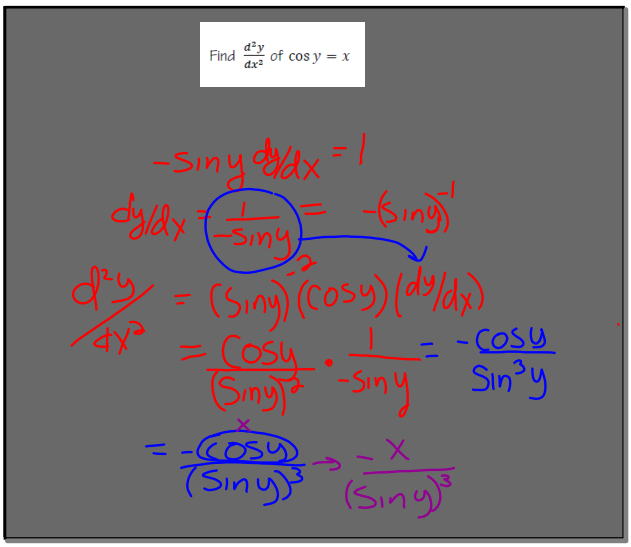

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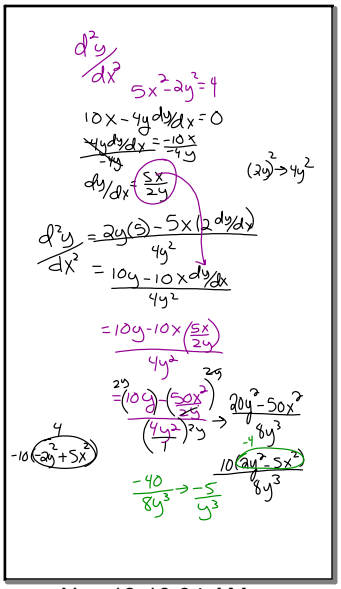

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