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Calculus 1432
Quiz 1
January 17, 2014

2 point per answer

1. Find $\frac{dy}{dx}$ if $\ln y = xy + y^3$

$\frac{1}{y}\cdot\frac{dy}{dx} = y + x\frac{dy}{dx} + 3y^2\frac{dy}{dx}$

$\frac{dy}{dx} = \frac{y}{\frac{1}{y} - x - 3y^2} = \frac{y^2}{1 - xy - 3y^3}$

2. $\frac{d}{dx}\left[\cos^4(3x)\right] = 4\cos^3(3x)\cdot(-\sin(3x))\cdot 3$

$= -12\sin(3x)\cos^3(3x)$

3. $\int (3x^2 - \sqrt{x})\,dx = x^3 - \frac{2}{3}x^{\frac{3}{2}} + C$

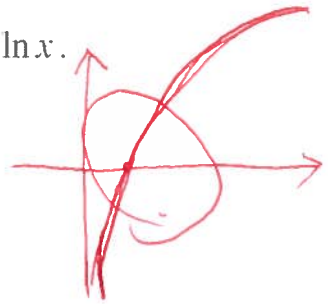
4. Find the inverse of $f(x) = \frac{x}{2x+3}$

$x = \frac{y}{2y+3} \Rightarrow 2xy + 3x = y$

$2xy - y = -3x$

$y = \frac{-3x}{2x-1} = \frac{3x}{1-2x}$

5. Graph and state the domain of $f(x) = \ln x$.



$D: (0, \infty)$.