Calculus WarmUp

Day after 4.2

Find $\frac{dy}{dx}$

1) $y = x^{3\pi}$

2) $4x^3 - x\cot(2x) = y$

3) $8 = \sin^4(7y-2) + x$

4) $x + 5\cos(3y^4) = 3$

5) $y = f(4x^2 + g(7x))$

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Find $\frac{dy}{dx}$

1) $y = x^{3\pi}$

$\frac{dy}{dx} = 3\pi x^{3\pi-1}$

2) $4x^3 - x\cot(2x) = y$

$12x^2 - \left(x \cdot -\csc^2(2x)\cdot 2 + \cot(2x)\cdot 1\right) = \frac{dy}{dx}$

$12x^2 + 2x\csc^2(2x) - \cot(2x) = \frac{dy}{dx}$

3) $8 = \sin^4(7y-2) + x$

$8 = [\sin(7y-2)]^4 + x$

$0 = 4[\sin(7y-2)]^3 \cdot \cos(7y-2)\left(7\frac{dy}{dx}\right) + 1$

$-1 = 4[\sin(7y-2)]^3 \cdot \cos(7y-2)\cdot 7\cdot\frac{dy}{dx}$

$\frac{-1}{4\sin^3(7y-2)\cos(7y-2)\cdot 7} = \frac{dy}{dx}$

4) $x + 5\cos(3y^4) = 3$

$1 - 5\sin(3y^4)\cdot 12y^3\cdot\frac{dy}{dx} = 0$

$1 = 5\sin(3y^4)\cdot 12y^3\cdot\frac{dy}{dx}$

$\frac{1}{5\sin(3y^4)\cdot 12y^3} = \frac{dy}{dx}$

5) $y = f(4x^2 + g(7x))$

$\frac{dy}{dx} = f'\left(4x^2 + g(7x)\right)\cdot\left(8x + g'(7x)\cdot 7\right)$