Principles of Calculus Modeling: An Interactive Approach by Donald Kreider, Dwight Lahr, and Susan Diesel
Exercises for Section 2.11

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1. (1 pt)
Let $3x^3 = y^2$. Find y' in terms of x and y.

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What are the slopes of the lines tangent to this curve at points where x = 0.6? Enter answers from smallest to largest.

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2. (1 pt)
Let $(x-1)^4 = (y+13)^5$. Find y' in terms of x and y.

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What are the slopes of the lines tangent to this curve at points where y = - 13? Enter answers from smallest to largest.

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3. (1 pt)
Let $x^5y^2 = 2x+4y$. Find $\frac{dy}{dx}$ in terms of x and y.

$\frac{dy}{dx} =$ ____________________

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4. (1 pt)
Find the equation of the tangent line to the curve $\frac{x}{y} + \left(\frac{y}{x}\right)^5 = 2$ at the point (-1, -1). Write the equation of the line in slope-intercept form.

$y =$ ____________________

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5. (1 pt)
Find the equation of the tangent line to the curve $\tan(xy^2) = \frac{18xy}{\pi}$ at the point $\left(\frac{\pi}{81}, \frac{9}{2}\right)$. Write the equation of the line in slope-intercept form.

$y =$ ____________________

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6. (1 pt)
Let $14xy = 2x+7y$. Find y'' in terms of x.

$y'' =$ ____________________

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7. (1 pt)
Let $s^7 + t^7 = 1$. Find $\frac{ds}{dt}$ in terms of s and t.

$\frac{ds}{dt} =$ ____________________

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8. (1 pt)
For the function $x = \sin y + \cos y$, calculate both $\frac{dy}{dx}$ and $\frac{dx}{dy}$. Write your answers in terms of sine and cosine.

$\frac{dy}{dx} =$ ____________________

$\frac{dx}{dy} =$ ____________________

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9. (1 pt)
For the function $x^3y^7 + 16xy^9 = 0$, calculate both $\frac{dy}{dx}$ and $\frac{dx}{dy}$.

$\frac{dy}{dx} =$ ____________________

$\frac{dx}{dy} =$ ____________________

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10. (1 pt)
For the function $\cos x \sin y + x^5 = 11$, calculate both $\frac{dy}{dx}$ and $\frac{dx}{dy}$. Write your answers in terms of sine and cosine.

$\frac{dy}{dx} =$ ____________________

$\frac{dx}{dy} =$ ____________________