TA: Ondřej Čertík
web: http://hpfem.math.unr.edu/~ondrej/
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Quiz 14

Problem 1

Find y' and y'':

$$y = e^{\alpha x} \sin \beta x$$

Problem 2

Find an equation of the tangent line to the curve at the point $(0, 1)$.

$$y = (1 + 2x)^1 0$$

Solution

1:

$$y' = -\cos(\cos x) \sin x$$

2:

$$y' = 4(2x^4 + 3x^3 + x^2 - 1)^3 (8x^3 + 9x^2 + 2x)$$

3:

$$2(x^2 + y^2)(2x + 2yy') = 25(2x + 2yy')$$

solving for y':

$$y' = -\frac{25x - 2x(x^2 + y^2)}{25y - 2y(x^2 + y^2)}$$

4:

$$\cos x^2 - 2x^2 \sin x^2 = y' \sin^2 y + y(2 \sin y)(\cos y)y'$$

$$y' = \frac{\cos x^2 - 2x^2 \sin x^2}{\sin^2 y + y(2 \sin y)(\cos y)}$$