1. Express the following limit as the derivative of a function f at a point a

$$\lim_{h \to 0} \frac{\cos\left(e^7 e^h\right) - \cos(e^7)}{h}$$

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2. Differentiate

$$f(x) = x^{2/3}$$

using the definition of the derivative.

You may use the formula

$$(a - b)(a^2 + ab + b^2) = a^3 - b^3\,.$$

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3. Find the equation of the line that is tangent to the curve $y = e^x$ and passes through the origin.

Note: this is not the same as the line passing through the point $(0, 1)$ on the curve.