# QUIZ 4

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**Time: 15 minutes**

**Problem 1.** Evaluate the limit $\lim_{t\to 0} \dfrac{\sqrt{1+t}-\sqrt{1-t}}{t}$

(a) $\dfrac{1}{2\sqrt{1+t}}$ (b) $\dfrac{1}{2\sqrt{1-t}}$ (c) $\dfrac{1}{2}$ (d) 1 (e) 2

**Problem 2.** Is there a number $x$ that is exactly 1 more than it's cube? (Hint: set up and equation, and figure out if it has any solutions using the Intermediate Value Theorem)

(a) Yes (b) No

**Problem 3.** What is the equation of the tangent line to the curve $y = \sqrt{x}$ at the point $(1, 1)$?

(a) $y = \dfrac{1}{2}x - \dfrac{1}{2}$ (b) $y = 2x - 2$ (c) $y = \dfrac{1}{2}x + \dfrac{1}{2}$ (d) $y + 1 = \dfrac{1}{2}(x + 1)$

**Problem 4.** Compute the limit $\lim_{h\to 0} \dfrac{e^{x+h} - e^x}{h}$. (Hint: definition of derivative).

(a) $\infty$ (b) 0 (c) $x$ (d) $e^x$ (e) $e$