TUTORS: THIS IS A TAKE HOME QUIZ

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Find the equation of the tangent line to $y = \sqrt{x^2 + 3}$ at $x = -1$.

DO NOT USE DIFFERENTIATION SHORTCUTS.

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Find the equation of the tangent line to $y = \dfrac{x}{2 - x}$ at $x = -1$.

DO NOT USE DIFFERENTIATION SHORTCUTS.

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Suppose that $f(t)$ represents Harpo's weight (in pounds) t weeks after he committed to starting a new diet. Interpret the statement $\lim_{h \to 0} \dfrac{f(5+h) - f(5)}{h} = \dfrac{1}{2}$.

Be as specific as possible, using the correct units for all relevant numbers.

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Suppose that $f(t)$ represents Graham's weight (in kilograms) t months after he committed to starting a new exercise regimen. Interpret the statement $\dfrac{f(3) - f(1)}{2} = 5$.

Be as specific as possible, using the correct units for all relevant numbers.

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Let $f(t)$ represent the height of a bungee jumper t seconds after she jumps from a bridge. Let $g(t)$ represent her velocity (use + for upward velocity and – for downward velocity). Sketch graphs of $f(t)$ and $g(t)$ on the same set of axes.

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Let $f(t)$ represent the temperature of a cup of hot coffee t minutes after it has been placed on a desk. Let $g(t)$ represent the rate of change of the temperature. Sketch graphs of $f(t)$ and $g(t)$ on the same set of axes.

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