Math 181 Honors Quiz 2 Version A

1. Convert the repeating decimal $2.\overline{7}$ to a fraction.

2. Find the domain of the function $f(x) = \dfrac{1}{\sqrt{x^2 - 9}}$.

3. Derive the slope of the line tangent to $g(x) = 1/x$ at the point $(x, g(x))$ using the method of appoximation by secants.

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4. The limit
$$\lim_{x \to a} f(x) = L$$

means for every $\epsilon > 0$ there is $\delta > 0$ such that $0 < |x - a| < \delta$ implies $|f(x) - L| < \epsilon$.

Use this δ-ϵ definition to verify that

(i) $\lim_{x \to 3} 2x = 6$

(ii) $\lim_{x \to 2} \dfrac{1}{5 - x} = \dfrac{1}{3}$