

Mathematics 1110H – Calculus I: Limits, Derivatives, and Integrals

TRENT UNIVERSITY, Summer 2026 (S62)

Quiz #2

*Due just before midnight on Wednesday, 24 June.**

Do any *two* (2) of questions 1–3.

1. Use the ε – δ definition of limits to verify part of the Sum Rule for limits: if $\lim_{x \rightarrow a} f(x) = L$ and $\lim_{x \rightarrow a} g(x) = M$, then $\lim_{x \rightarrow a} [f(x) + g(x)] = L + M$. [2.5 + 0.5 bonus]
2. Use the limit definition of the derivative to verify that $\frac{d}{dx}(x^3 + 2x) = 3x^2 + 2$. [2.5]
Hint: Plug the function into the definition and do algebra ...
3. Find the equation of the tangent line to $y = \sqrt{x}$ at $x = 1$. [2.5]

[Total = 5]

Sonnet xlv

Euclid alone has looked on Beauty bare.
Let all who prate of Beauty hold their peace,
And lay them prone upon the earth and cease
To ponder on themselves, the while they stare
At nothing, intricately drawn nowhere
In shapes of shifting lineage; let geese
Gabble and hiss, but heroes seek release
From dusty bondage into luminous air.
O blinding hour, O holy, terrible day,
When first the shaft into his vision shone
Of light anatomized! Euclid alone
Has looked on Beauty bare. Fortunate they
Who, though once only and then but far away,
Have heard her massive sandal set on stone.

Edna St. Vincent Millay

* You should submit your solutions via Blackboard's Assignments module, preferably as a single pdf. If that fails, please submit directly to the instructor on paper or via email to sbilaniuk@trentu.ca. You may work with others, use whatever tools you like, and look things up, so long as you write up your submission by yourself and give due credit to your collaborators and any tools or sources you actually used.