

Differential Calculus - Course Study Sheet

Course: Differential Calculus Cluster: Mathematics and Quantitative Methods

Explains limits, continuity, derivatives, and rates of change for functions of one variable.

Five-module course map

Module	Active evidence to produce
1. limit behavior	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
2. continuity	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
3. derivative definitions	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
4. differentiation rules	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
5. applications of derivatives	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.

Reliable learning method

define the changing quantities, inspect local behavior, differentiate with valid rules, track units, and interpret the derivative

Representative application

Use a cost function to find and interpret marginal cost while distinguishing it from average cost and an exact discrete change.

Weekly study cycle

1. Preview the objective and write two questions. 2. Attend or engage and capture decisions rather than every sentence. 3. Reconstruct the main idea within 24 hours. 4. Complete independent practice. 5. Analyze the first unsupported move on each error. 6. Use feedback. 7. Schedule a delayed mixed recheck.

Self-check before moving on

Can you explain the idea without notes, complete a fresh task, detect a near-miss, verify the result, and state a limitation? Watch especially for: treating the derivative as a symbol-manipulation answer without domain, units, sign, or local meaning.

What to save

a derivative analysis linking formula, graph, units, and contextual decision

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