Differentiating transformed elementary functions

Key skills | Free preview

Learning target: Differentiate polynomial and rational-power functions and linear combinations of f(ax+b), with f a listed power, sine, cosine, tangent, exponential or natural log, using patterns or by hand.

Elementary derivative rules combine with the chain rule when the input is scaled or shifted. The derivative of a transformed function includes the rate of change of its inner expression. Rational powers and logarithms also require domain care. Write each contribution separately before simplifying a linear combination so that missing coefficients are easier to detect.

Try the mathematics

Task 1. Differentiate $3x^{(-1/2)}+2\ln(4x+1)-\sin(3x)+\tan x$. State a real domain on which your derivative formula is valid.

Continue with the full worksheet

The complete resource has 2 focused task sets and substantive worked solutions. Use an exercise book or print the A4 worksheet. This preview shows the first task without its full solution.

Find this resource: https://resources.aspiretopowerlearning.com.au/vce/skills/aspire-mm-u34-o1-ks-10/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Mathematical Methods; Units 3–4; Outcome 1; Key skills; bullet 10; p. 102.

The learning target is a concise paraphrase. Aspire reference: aspire-mm-u34-o1-ks-10. This is an internal identifier, not an official VCAA code.

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