

Session 09-05: Tasks

Final Recap - Calculus & Curve Sketching

Exam-Style Problem: Graphical Differentiation / Integration / System of Linear Equations

Consider the following third degree polynomial $g(x)$:

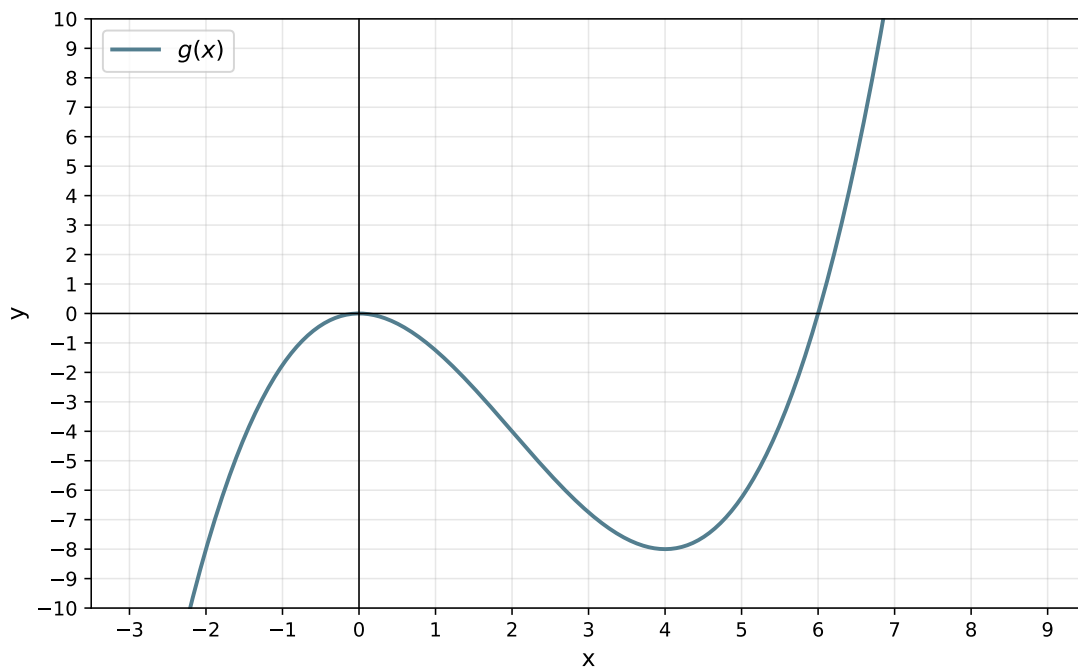


Figure 1: Graph of the third degree polynomial $g(x)$

Part a)

Graph the derivative $g'(x)$ of the function depicted above directly into the figure.

Part b)

Graph the antiderivative $G(x)$ of the function depicted above directly into the figure and interpret its relation to $g(x)$.

Part c)

Determine the functional equation $g(x) = ax^3 + bx^2 + cx + d$ by determining the values of a , b , c , and d .

Part d)

Determine the functional equation of the tangent $t(x)$ at $x = -2$.

(Hint: Continue your work using the function $g(x) = \frac{1}{4}x^3 - \frac{3}{2}x^2$.)

Part e)

Compute the angle of intersection α between the tangent and the x -axis.