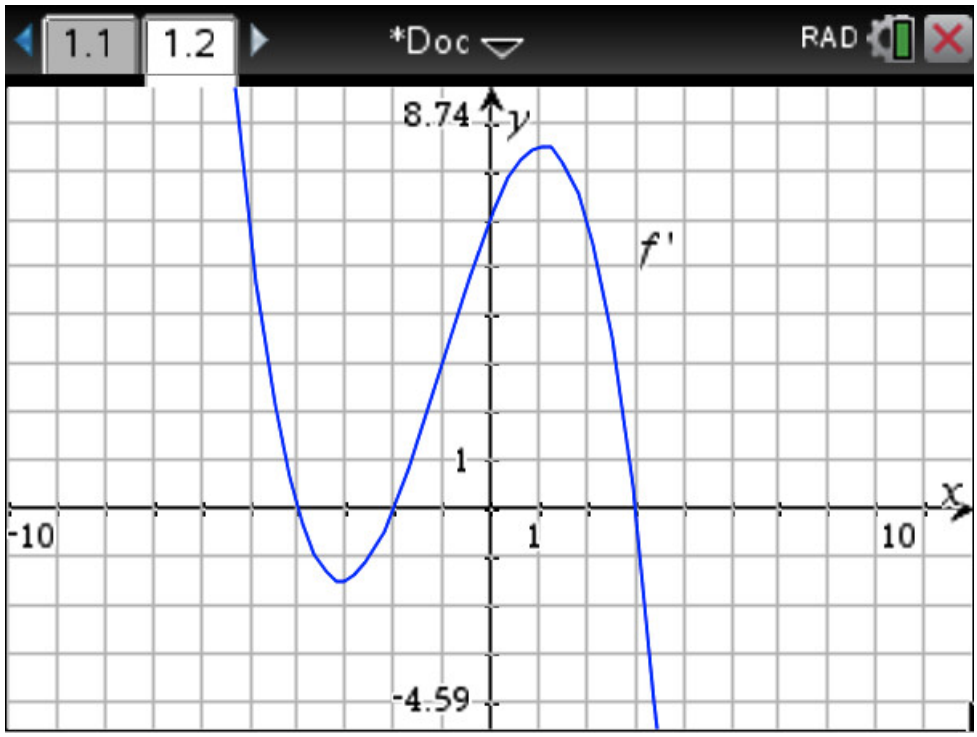
Exercise 1 Calc. : ✓

The figure represents the graph of a derivate function f' of a function f.



1. Give the x-coordinates of the extrema of f and state their nature.	6 marks
2. From the graph of f' find the slope of the tangent to the graph of f at $x = -1$.	2 marks
3. Find the solutions for $f'(x) = 6$.	3 marks
4. The graph of function f passes through point P(0, 1). Find the equation of the tangent to the graph of f at point P.	4 marks

Exercise 2 Calc. : ✓

Consider the function $f(x) = -x^3 - 3x^2 + 5x + 7$ and its graph F.

1. Draw a table of signs showing the variations of function f.	6 marks
2. Find the coordinates of the turning points of F and state their nature. Give answers correct to 1 d.p.	2 marks
3. Find the equation of the tangent to the graph at $x = -1$.	2 marks
4. Find the coordinates of the points on F where the tangent has slope 5.	2 marks
5. Find the equation of the tangents to F with slope 5.	2 marks

Exercise 3 Calc. : ✓

A volleyball player serves from the back line of the court to send the ball into the adversary camp. The height h of the ball, in meters, is given by the following function :
$h(t) = -4.9t^2 + 3.8t + 1.7$, where t is in seconds.
(For this exercise give all answers correct to 2 d.p.)

1. What is the maximum height reached by the ball?	3 marks
2. After how long will the ball fall to the ground?	3 marks
3. For how long does the ball stay above 1.5 m?	3 marks
4. The ball will reach the net at $t = 0.6$ s. The height of the net is 2.34 m. Will the ball pass over the net into the adversary camp? Explain.	3 marks

Exercise 4 Calc. : ✓

Consider the function $g(x) = \dfrac{ax-5}{-3x+1}$ and its graph G.	
1. What is the domain of function g?	2 marks
2. Give the equation of the vertical asymptote to G.	2 marks
3. $y = -2$ is an asymptote to G. Determine the value of a.	2 marks
4. What is the range of function g?	2 marks
5. Find the coordinates of the intersections points of G with the x and y axis.	2 marks
6. Find the intersection points between G and the line $y = x + 1$.	2 marks

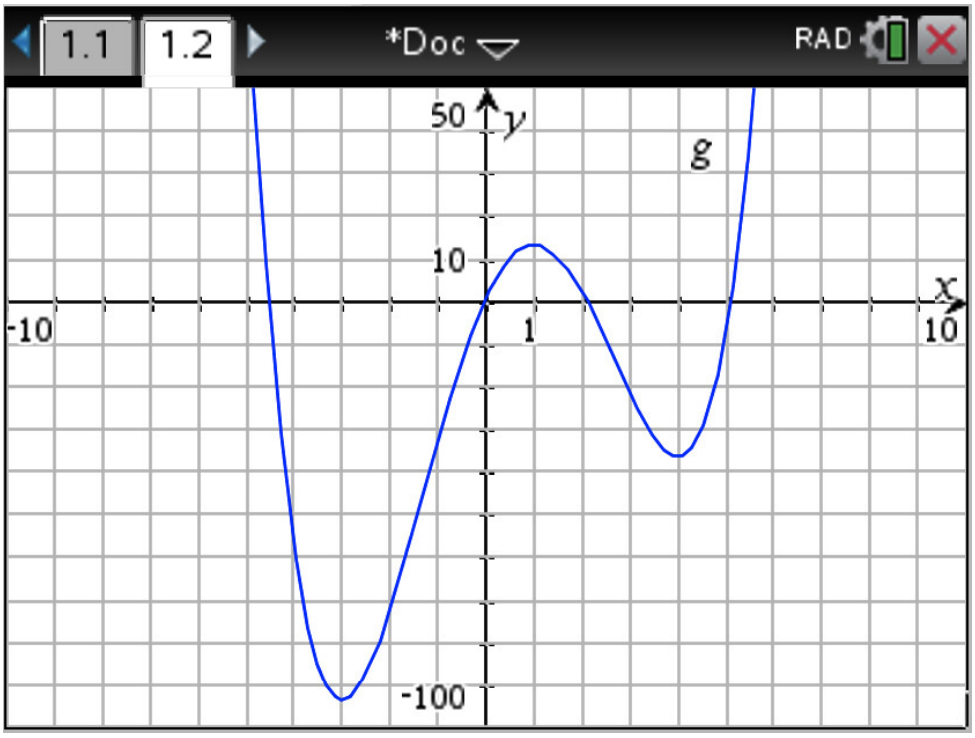
Exercise 5 Calc. : ✓

A function $f(x)$ has one local minimum at $(1,\ -5)$. State the coordinates of the local minimum of the following functions:	
1. $f(x-5)+7$	2 marks
2. $f(x+4)+1$	2 marks

Exercise 6 Calc. : ✓

ANSWER ON THIS SHEET AND RETURN WITH OTHER ANSWER SHEETS

1. The figure represents the graph of a function $g(x)$. Sketch a possible graph for the function $g'(x)$ on the same grid. — 4 marks



2. The figure represents the graph of a derivate function $f'(x)$. Sketch a possible graph for the function $f(x)$ on the same grid. — 4 marks