

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

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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.	$3 \mathrm{marks}$

Exercise 4	Calc. : 🗸
Consider the function $g(x) = \frac{ax-5}{-3x+1}$ 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

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:	
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1. $f(x-5) + 7$	2 marks
2. $f(x+4) + 1$	2 marks

