

**S6 MATHEMATICS – 3 Periods**

**PART B**

**DATE:**  19th, December 2018

**DURATION OF THE EXAMINATION:** 90 minutes

**Total: 65 points**

**With Calculator**



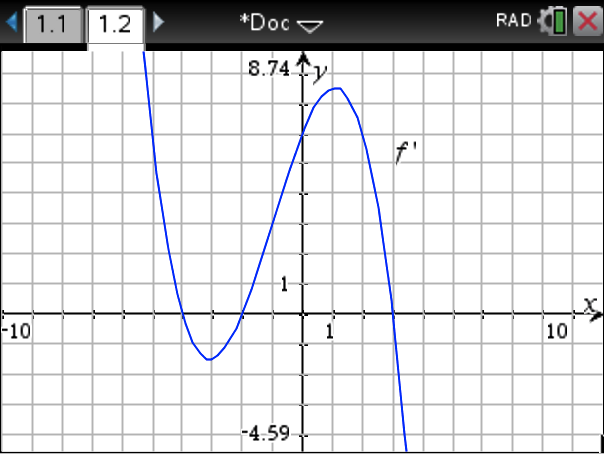
**NUMBER OF PUPILS: 9**

**INSTRUCTIONS: ANSWER QUESTION 6-B ON THE GRAPH PROVIDED**

**AND RETURN WITH OTHER ANSWER SHEETS**

**EXERCISE 1-B:**

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

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1. Give the -coordinates of the extrema of and state their nature.
2. From the graph of find the slope of the tangent to the graph of at
3. Find the solutions for
4. The graph of function passes through point Find the equation

of the tangent to the graph of at point .

**EXERCISE 2-B:**

Consider the function *f* (*x*) = and its graph *F*.

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

**EXERCISE 3-B:**

A volleyball player serves from the back line of the court to send the ball into the adversary

camp. The height of the ball, in meters, is given by the following function :

, 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?
2. After how long will the ball fall to the ground?
3. For how long does the ball stay above 1.5 m ?
4. The ball will reach the net at . The height of the net is 2.34 m.

Will the ball pass over the net into the adversary camp? Explain.

**EXERCISE 4-B:**

Consider the function and its graph .

1. What is the domain of function ?
2. Give the equation of the vertical asymptote to .
3. is an asymptote to . Determine the value of .
4. What is the range of function ?
5. Find the coordinates of the intersections points of with the and axis.
6. Find the intersection points between and the line

**EXERCISE 5-B:**

A function has one local minimum at . State the coordinates of the local

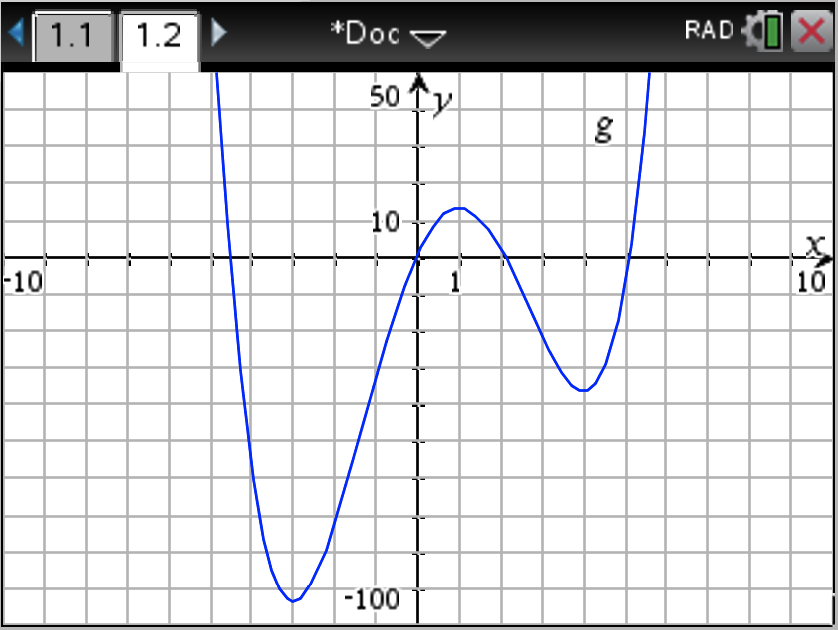
minimum of the following functions:



**EXERCISE 6-B:**  **ANSWER ON THIS SHEET AND RETURN WITH OTHER ANSWER SHEETS**

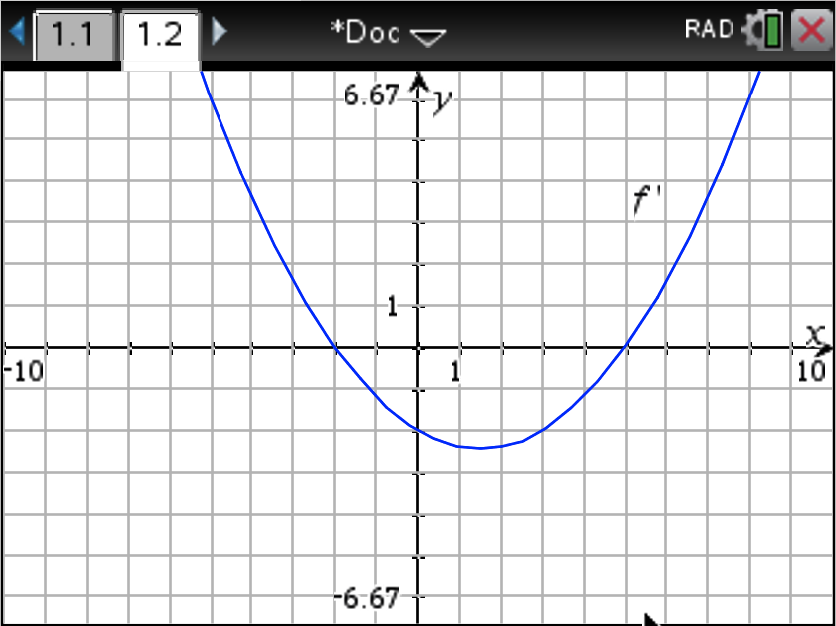
1. The figure represents the graph of a function . Sketch a possible graph for

the function on the same grid.



1. The figure represents the graph of a derivate function . Sketch a possible

graph for the function on the same grid.



**- - - END OF EXAM - - -**