



## **S6 MATHEMATICS – 3 PERIODS PART A**

**DATE:** 19<sup>th</sup>, December 2018

**DURATION OF THE EXAMINATION:** 45 minutes

**Total: 35 points**

**Non Calculator**



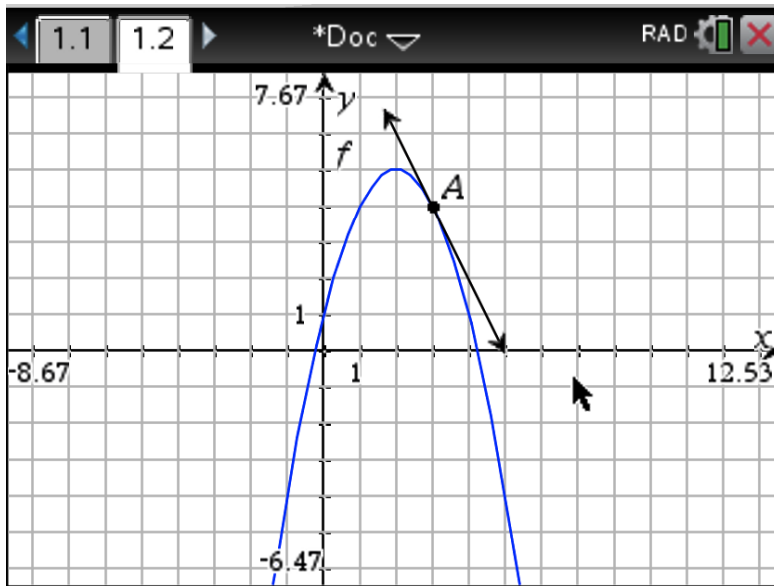
**NUMBER OF PUPILS: 9**

**EXERCISE 1-A:**

Differentiate the following functions.

a)  $f(x) = -3x^3 + 6x^2 - \frac{13}{217}$  [2]

b)  $g(x) = \frac{1}{2}x^4 - \frac{1}{3}x^3$  [2]

**EXERCISE 2-A:**The figure shows the graph of function  $f$ .

- a) From the graph find the values of  $f(0)$ ,  $f(2)$  and  $f(3)$ . [3]
- b) From the graph find the values of  $f'(2)$  and  $f'(3)$  [4]
- c) Write the equation of the tangent to the graph at point A. [4]
- d) From the graph find the range of values for  $x$  such that  $f'(x) < 0$ . [4]

**EXERCISE 3-A:**Consider the function  $f(x) = x^2 - 2x - 8$  and its graph F.

- a) Find the coordinates of the turning point of F. [2]
- b) Write the equation of the tangent to F at  $x = 2$ . [4]
- c) Find the coordinates of the intersection point of F with the line  $y = -x - 2$ . [4]

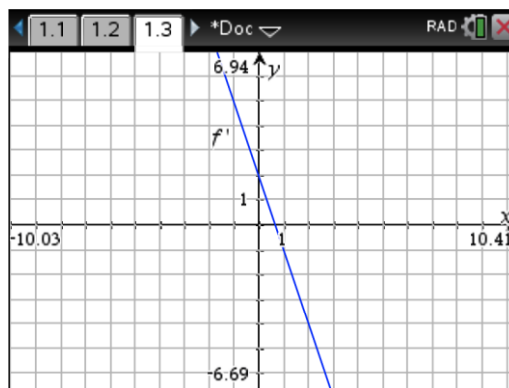
**EXERCICE 4-A:**

[6]

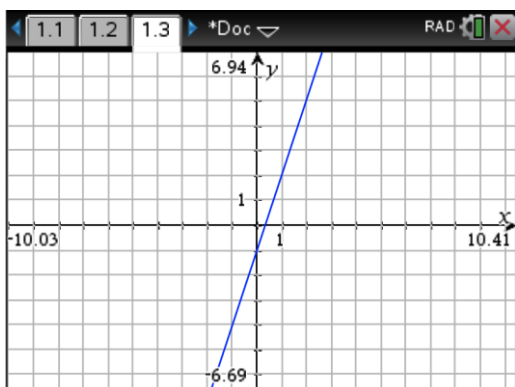
The figure on the right represents the graph of a derivate function  $f'$ .

Choose among the graphs below the one (s) that could represent the function  $f$ .

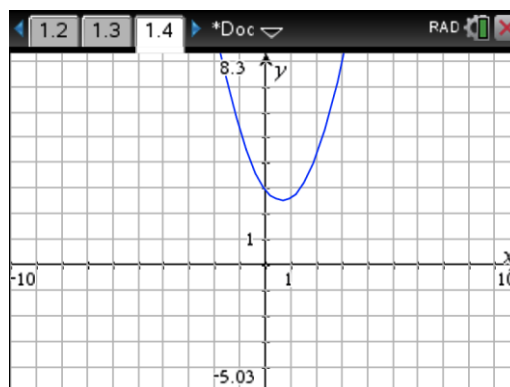
**You must justify your answer carefully, otherwise no points will be awarded.**



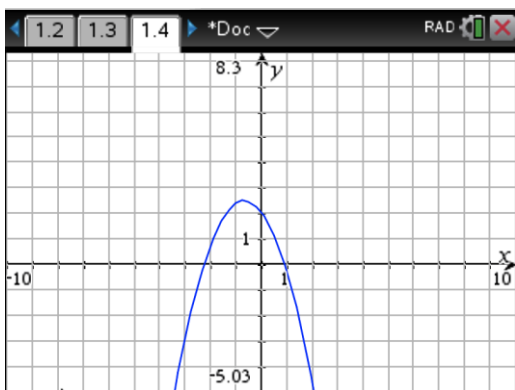
Graph of function  $f'$



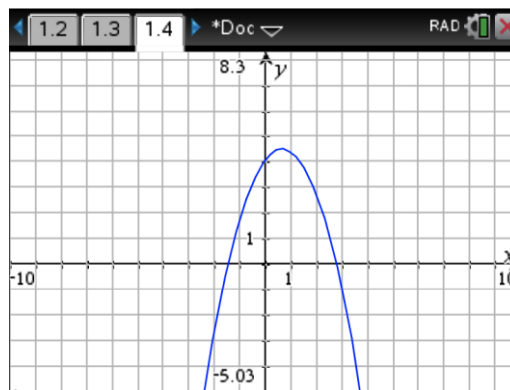
Graph 1



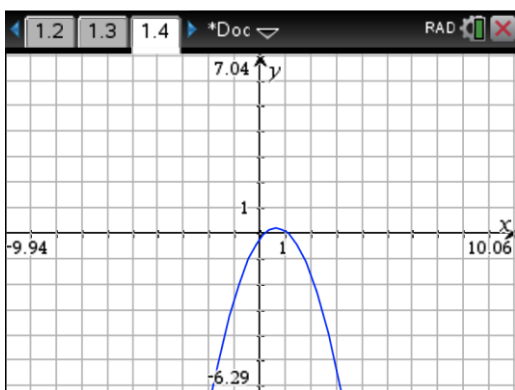
Graph 2



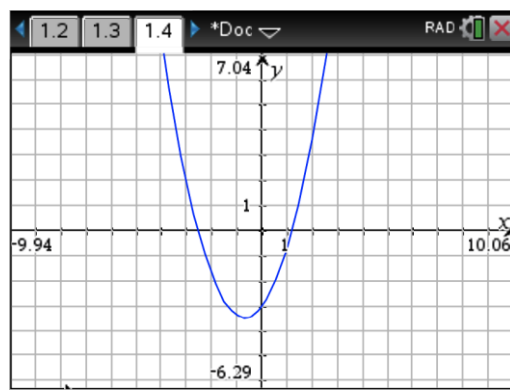
Graph 3



Graph 4



Graph 5



Graph 6