

**Exercise 1**

Calc. : ✗

In a box of 4 matches one is shorter than the others. Four players pick a match one after the other. Whoever picks the short match loses.

1. Show, with the aid of a tree diagram the probabilities of each player getting the short match. 4 marks
2. Give the following probabilities: 4 marks
  - The first player loses:
  - The second player loses:
  - The third player loses:
  - The fourth player loses:
3. Does it have an effect on the outcome whether you are the first to choose the match or the last? 2 marks

**Exercise 2**

Calc. : ✗

In a box of chocolates, we find 24 different chocolates. 18 chocolates are made from milk chocolate and 6 are made from white chocolate. Two thirds of the milk chocolates have a marzipan filling. In total there are 16 chocolates with a marzipan filling in the box.

1. Complete the following two-way table. 5 marks

Chocolate	Milk Chocolate	White Chocolate	Total
Marzipan			
With			
Without			
Total			

2. If a chocolate is picked at random from the full box, calculate the probability that it would be a white chocolate one without a marzipan filling. 2 marks
3. Given that a chocolate chosen at random from the full box is a white chocolate, calculate the probability that it has a marzipan filling. 2 marks

**Exercise 3**

Calc. : ✗

Solve the following equations:

1.  $3(x - 2) = 6$  2 marks
2.  $-5x + 3 = 2x + 10$  2 marks
3.  $4 = -2(x + 3)$  2 marks
4.  $1 = 3(x - 2) + 3 - 2x$  2 marks
5.  $x^2 - 2x - 3 = 0$  2 marks
6.  $x^2 - 4x + 4 = 0$  2 marks

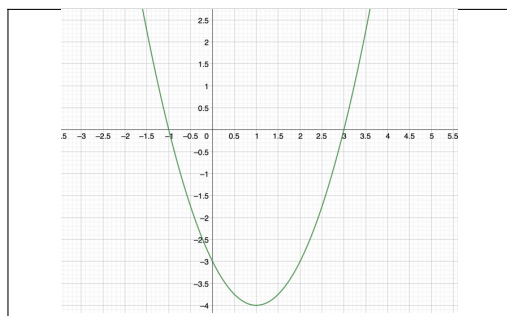
**Exercise 4**

Calc. : ✗

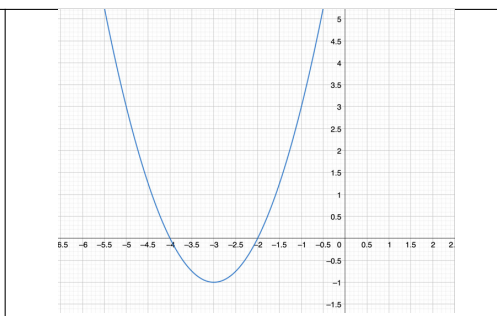
Match each of the following functions to their corresponding graph.

8 marks

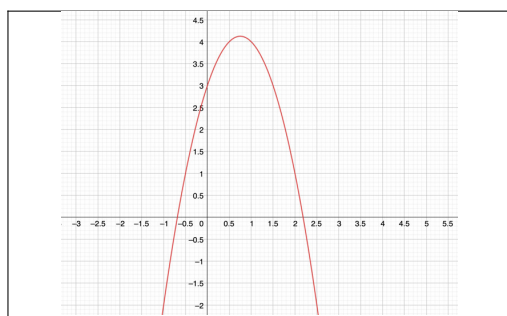
Function	$A(x) = -2x^2 + 3x + 3$	$B(x) = (x - 3)(x + 1)$	$C(x) = -2(x + 4)^2 + 5$	$D(x) = (x+3)^2 - 1$
Graph				



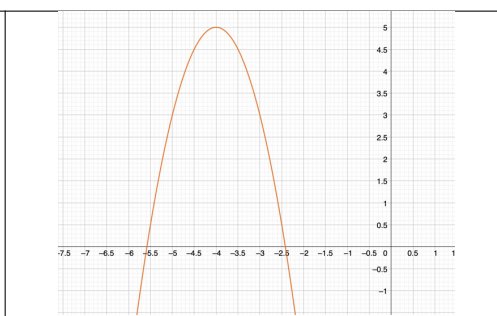
a



b



c

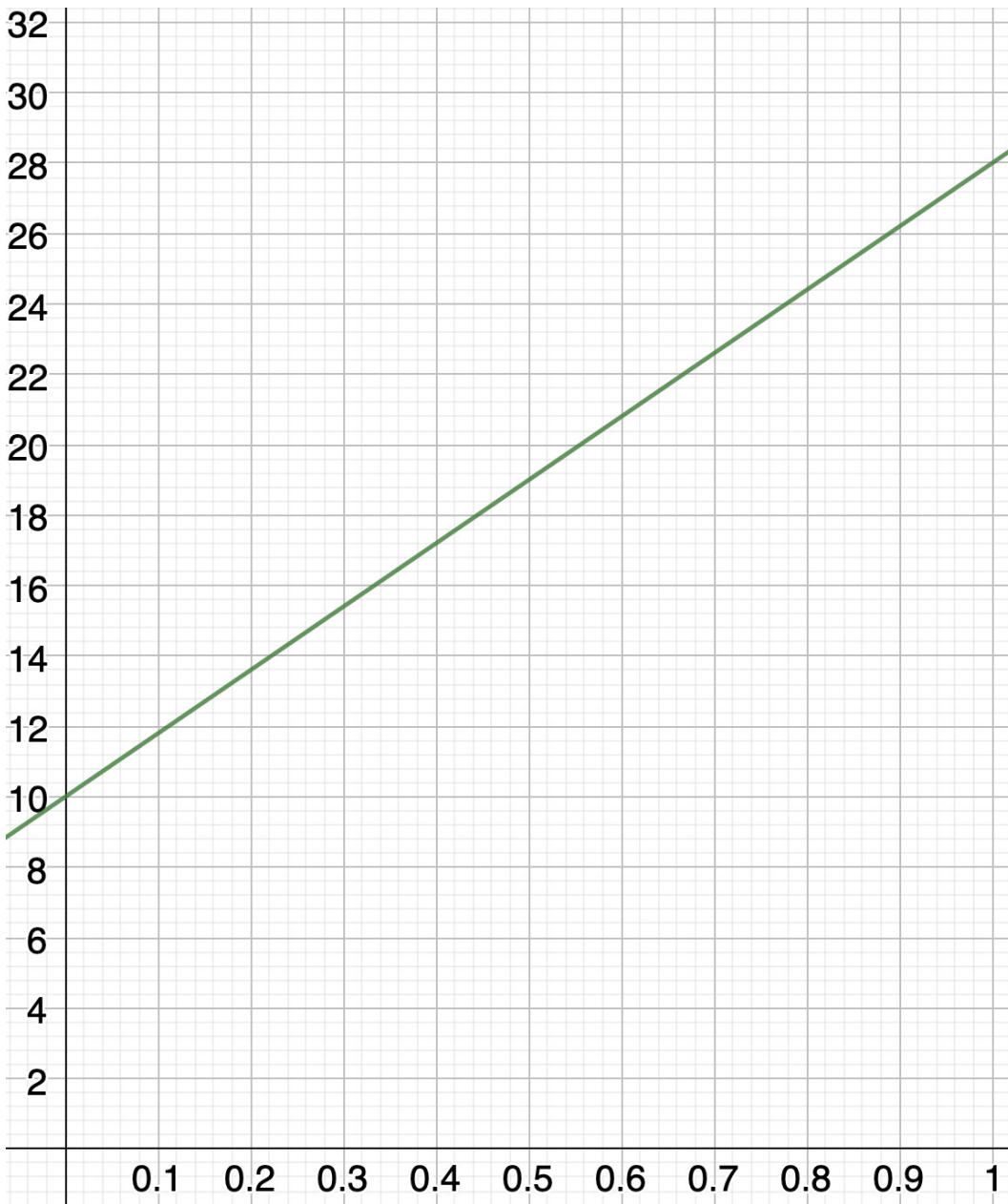


d

Exercise 5

Calc. : X

Helen is taking part in a cycling race. She has already cycled 10 km and is advancing at a constant speed. The following graph represents the distance travelled as a function of the time in hours.



1. Identify the distance travelled at the origin (of the graph) and the slope of the line. At what speed is Helen travelling? 4 marks
2. Formulate an equation for the distance,  $d$  (in km) that Helen cycles as a function of time,  $t$  (in h) since she passed the 10 km mark. 2 marks
3. How many kilometres will Helen have cycled, 90 minutes after passing the 10 km mark? 3 marks

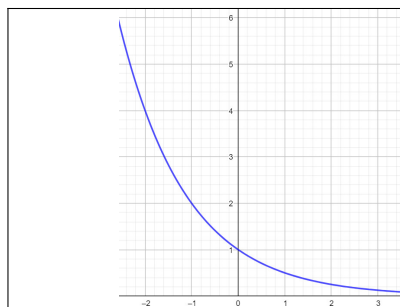
**Exercise 6**

Calc. : ✖

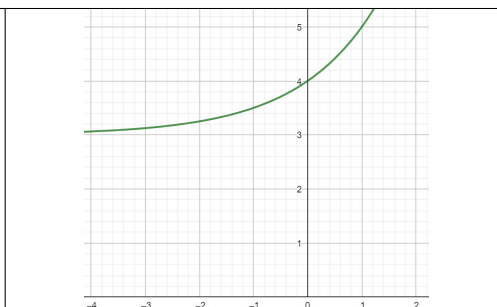
Match each of the following functions to their corresponding graph.

8 marks

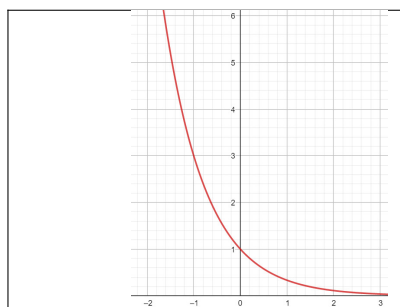
Function	$f(x) = 2^{2x} + 3$	$g(x) = 3^{-x}$	$h(x) = 0.5^x$	$q(x) = 2^x$
Graph				



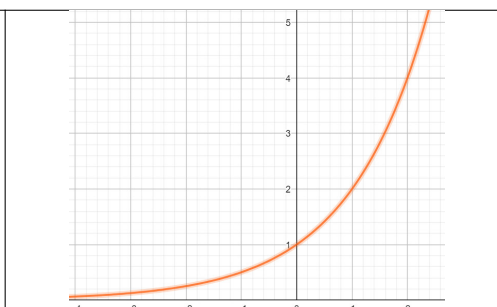
a



b



c



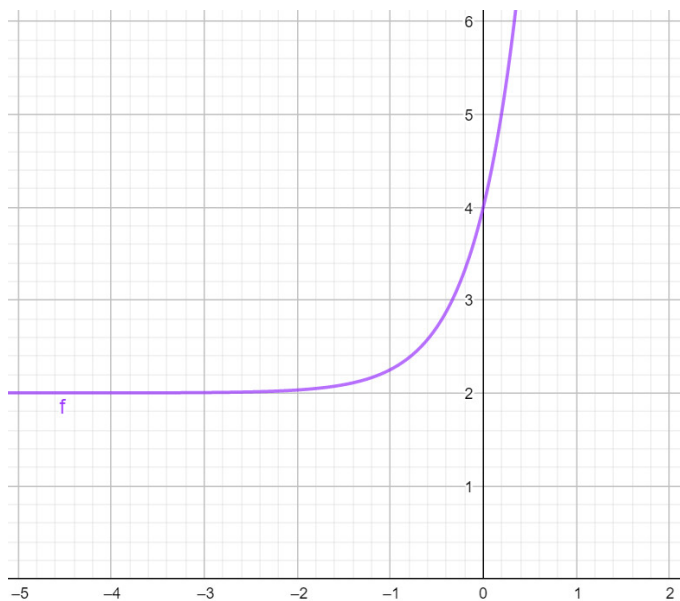
d

**Exercise 7**

Calc. : ✖

The following image is a graphic representation of the function

$$f(x) = 2^{3x+1} + 2.$$



1. State the domain of the function.
2. State the range of the function.
3. Find the y-intercept.
4. What are the roots of the function?
5. Estimate the following values:
  - (a)  $f(0.2) = \dots$
  - (b)  $f(-2) = \dots$
  - (c) if  $f(x) = 3$ , then  $x = \dots$

2 marks

2 marks

2 marks

2 marks

6 marks