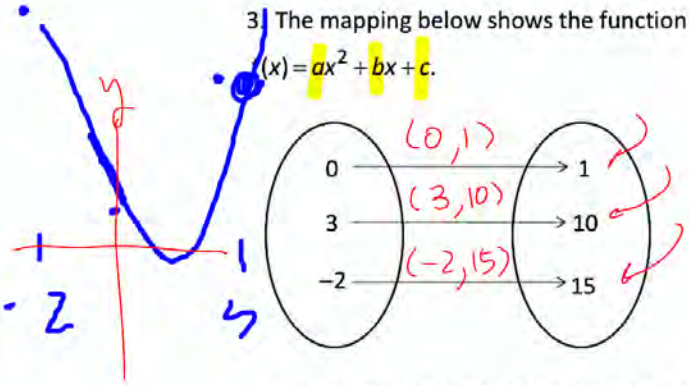
Questions



3. The mapping below shows the function $f(x) = ax^2 + bx + c$.

a) Use the first mapping to find the value of c.

$1 = y = f(0) = c$

$c = 1$ //

b) Use the next two mappings to form two simultaneous equations in a and b.

$y = ax^2 + bx + 1$

$10 = a(3)^2 + b3 + 1$ ①

$15 = a(-2)^2 + b(-2) + 1$ ②

2 unknow a, b

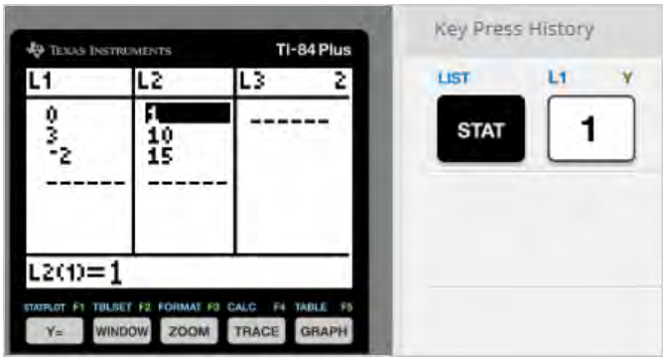
c) Find the values of a and b.

$9 = 9a + 3b \Rightarrow a = \frac{9-3b}{9}$

$4 = 4a - 2b$

$14 = 4\left(\frac{9-3b}{9}\right) - 2b$

$\Rightarrow a = 2, b = -3, c = 1$



1. $g(x) = \frac{1}{4}x^3 + 4x^2 - 5x - 3$.

a) Calculate $g(2)$.

2nd CALC 1

$x = 2 \rightarrow y = ?$

$g(2) = \frac{1}{4}(2)^3 + 4(2)^2 - 5(2) - 3$

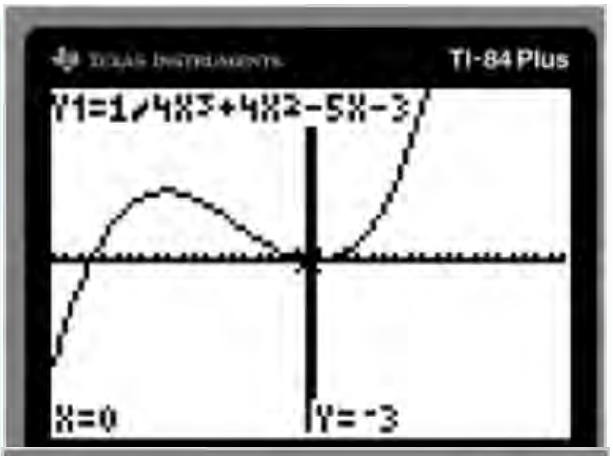
$= \frac{1}{4}8^2 + 4\frac{16}{4} - 10 - 3 = 5$

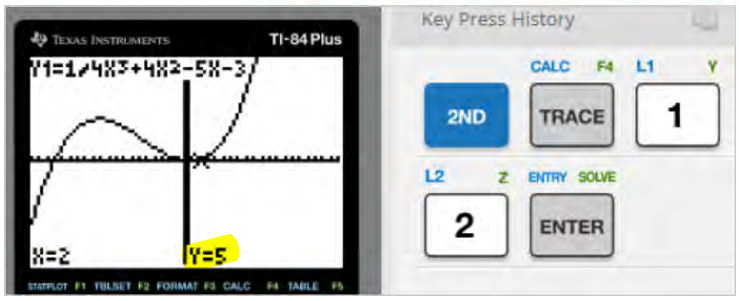
b) Find $g(x) = 0$ giving your answer(s) to 2 decimal places.

2nd calc 2

$y = 0$

$x = 1.57$ $x = -0.45$





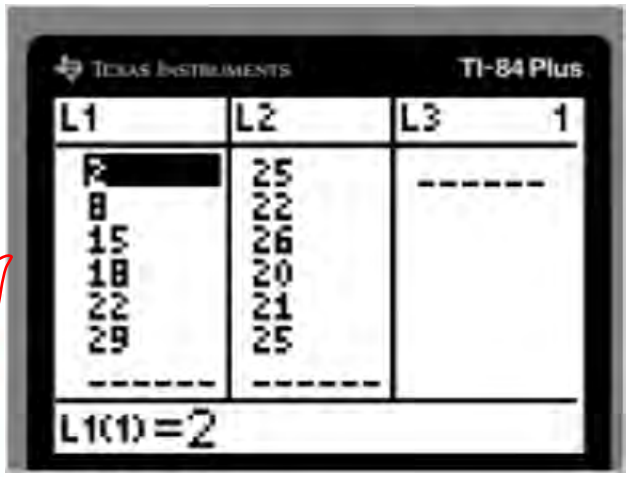
1 A function $T(d)$ gives the average daily temperature T, in °C, of a certain city during last January in terms of d, the day of the month.

a Explain the meaning of $T(2) = 25$.

b State the domain of the function T.

c Given the data in the table on $T(d)$, estimate a reasonable range for $T(d)$.

d	2	8	15	18	22	29
T	25	22	26	20	21	28



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2 Consider the function $f(x) = 10 - 4x$.

a Write down the independent variable for this function.

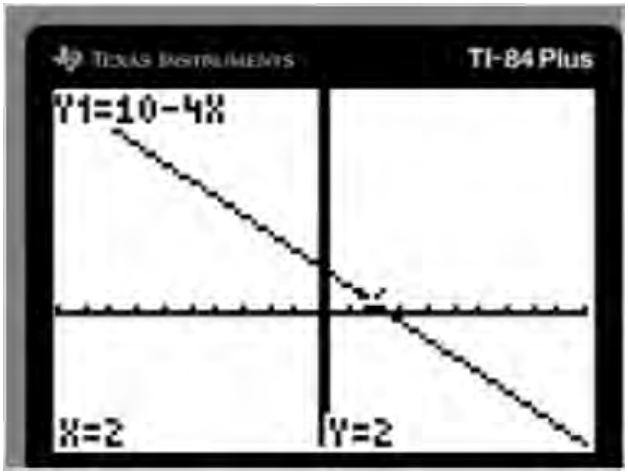
b Calculate:

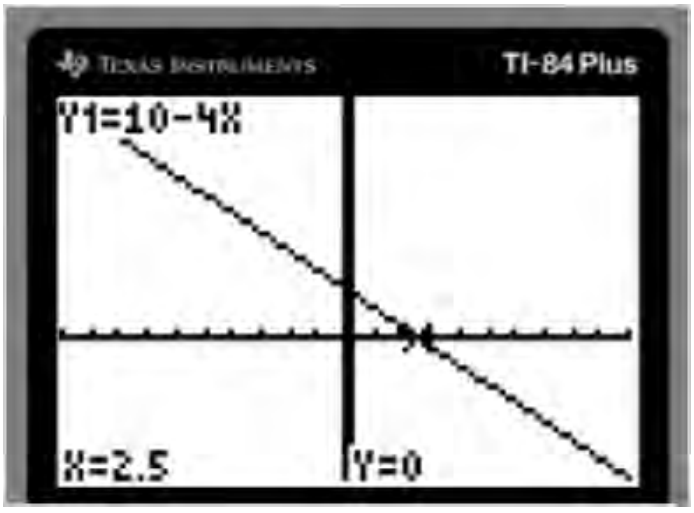
i $f(2)$ ii $f\left(-\frac{1}{2}\right)$

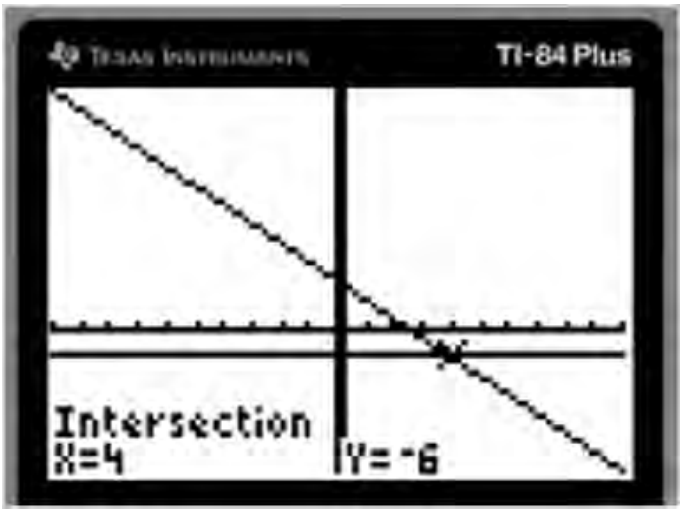
c Show that $f(2.5) = 0$.

d There is an x for which $f(x) = -6$. Find this value of x.

5 marks

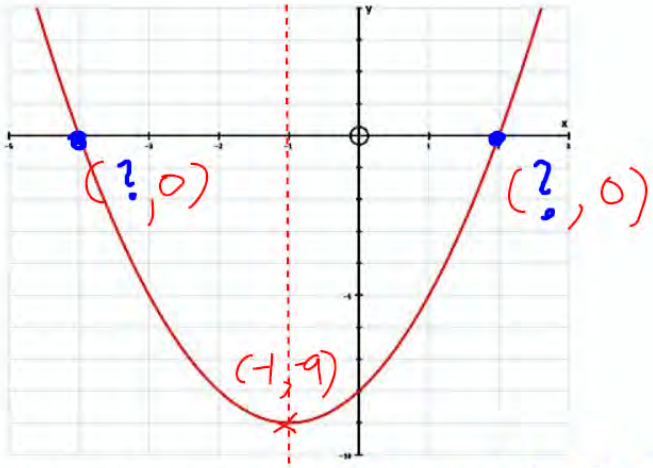






2. The graph of $f(x)$ is shown below.

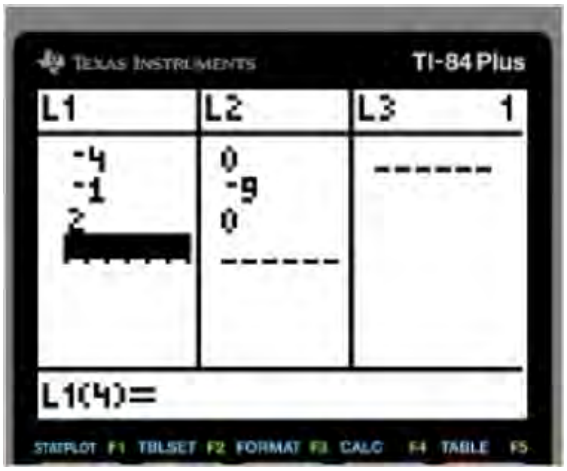
$f(x)$ has a vertex at (-1,-9).

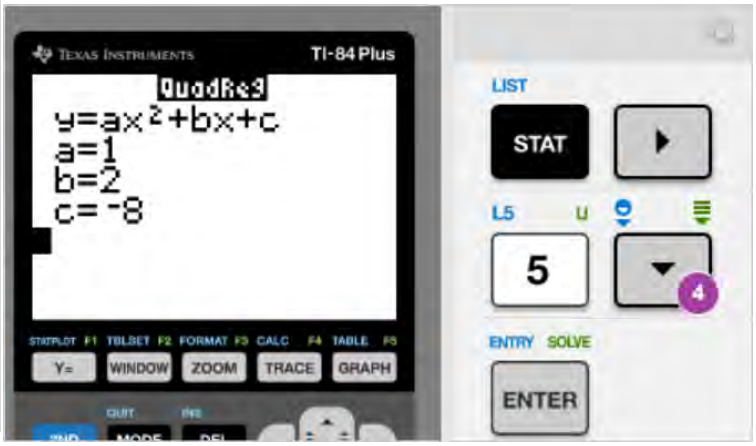


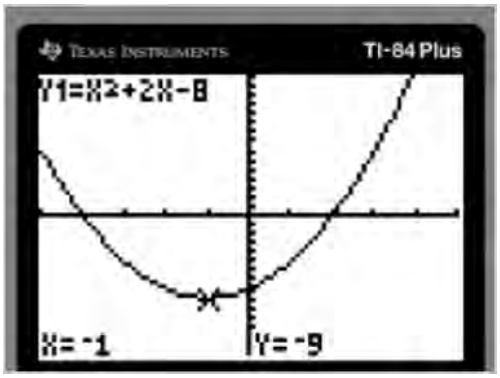
a) Use the graph to find $f(x) = 0$. $x = 2; -4$

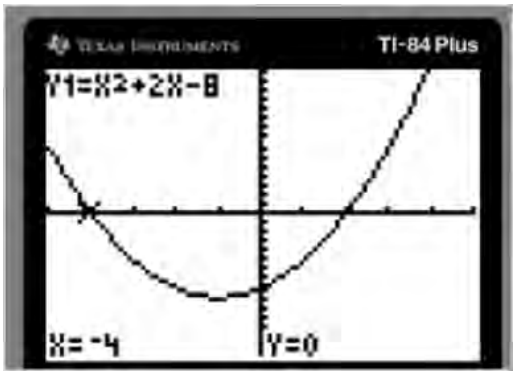
b) State the range of $f(x)$. $y \geq -9$

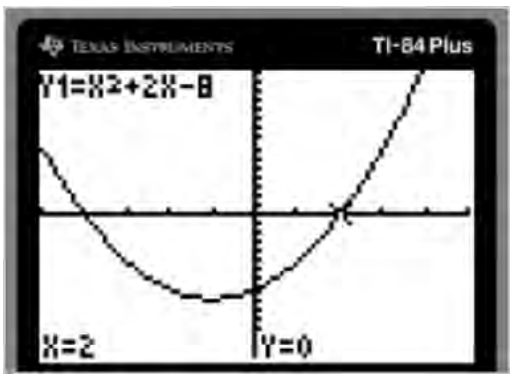
(-4,0)
(-1,-9)
(2,0)











Questions

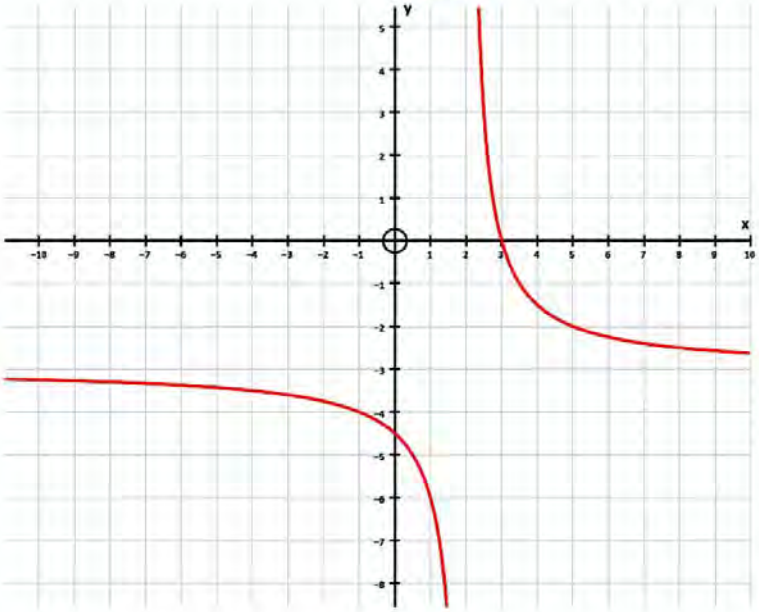
4. The graph below shows the function $f(x)$.

$f(x)$ has two asymptotes.

Write down the equations of both of these.

$x \neq 2$

$x = 2$



$y = -3$

$y = \frac{1}{x-2} - 3$