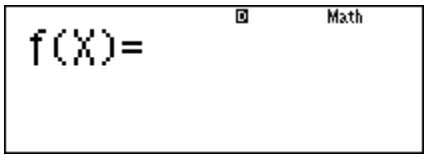
FX-82ZA PLUS

GRADE 12 EXAM QUESTIONS

Question 1 ALGEBRA

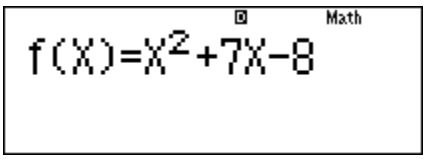
Solve for x: *Using TABLE MODE on the CASIO Scientific Calculator*

1.1 $x^2 + 7x - 8 < 0$ **(4)**



MODE 3

ALPHA) x^2 + 7 ALPHA) − 8



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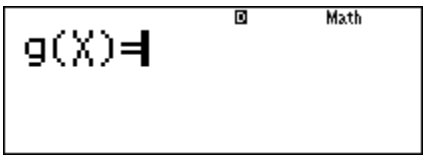

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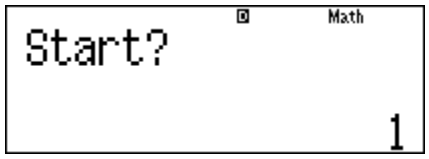

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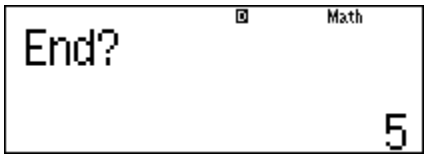

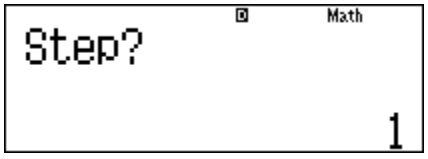

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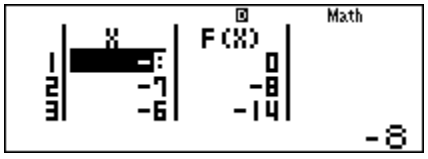

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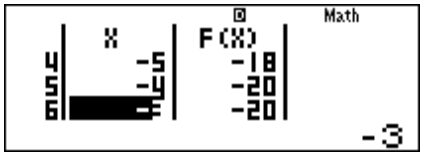
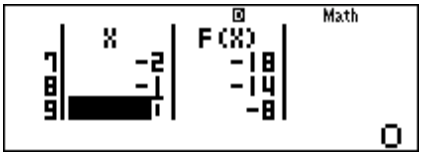
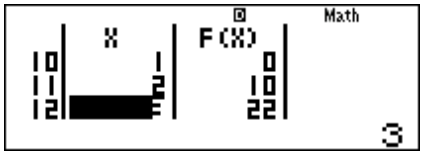
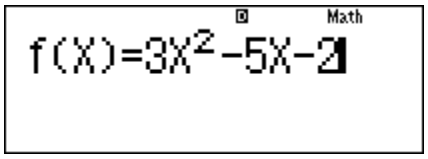






1.2 $3x^2 - 5x = 2$ **(3)**



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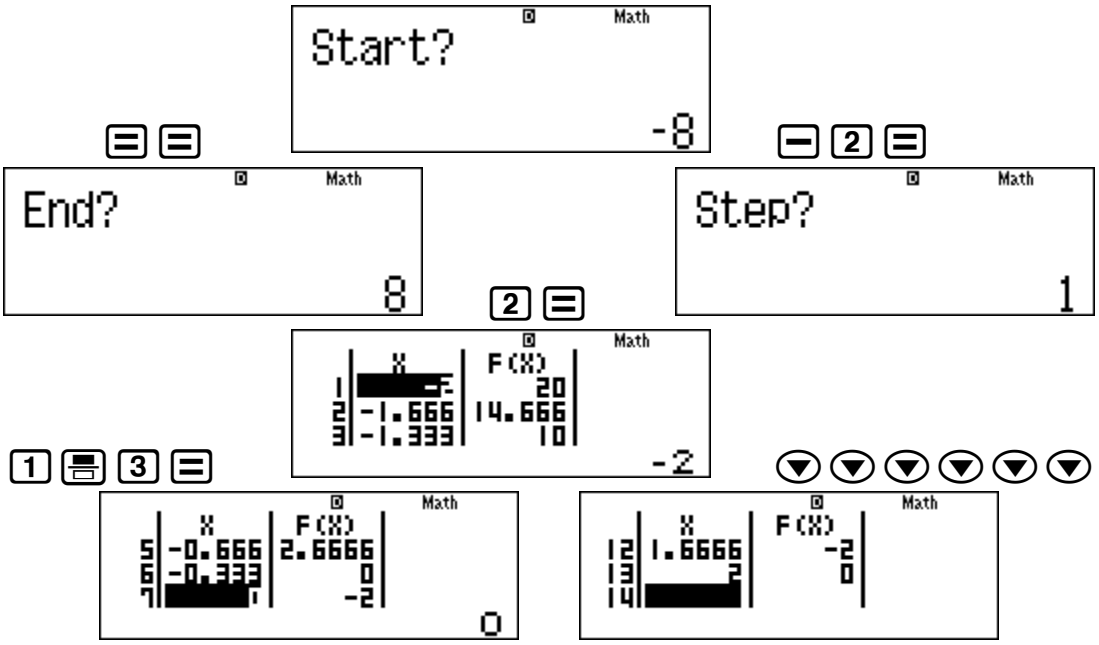
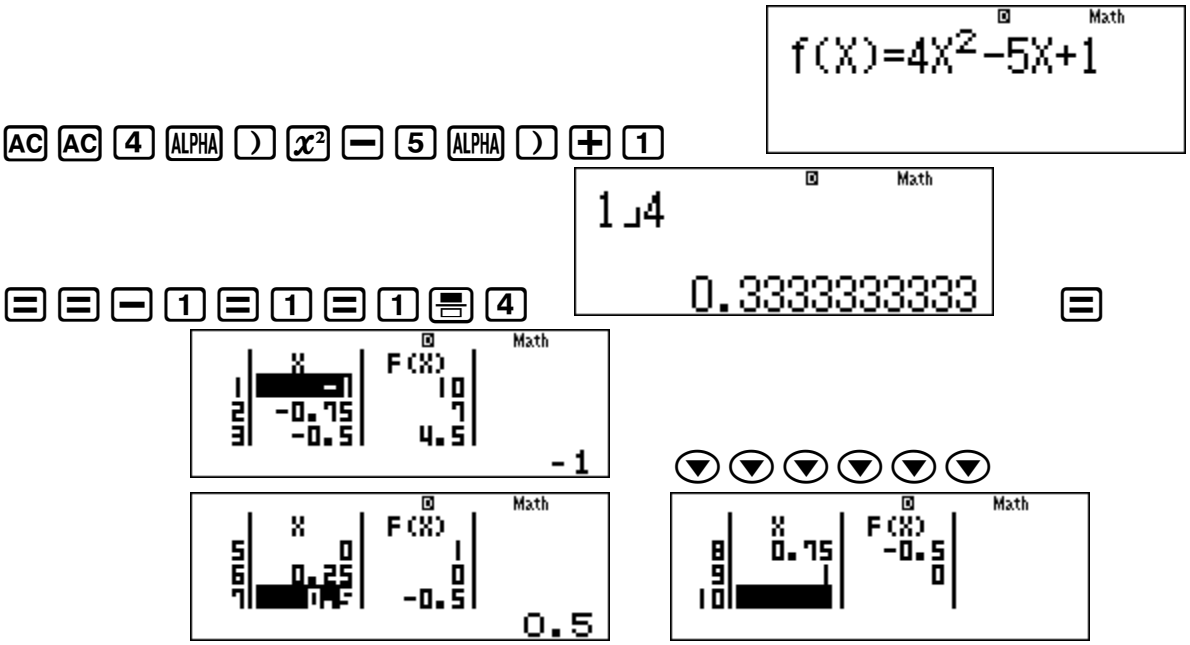


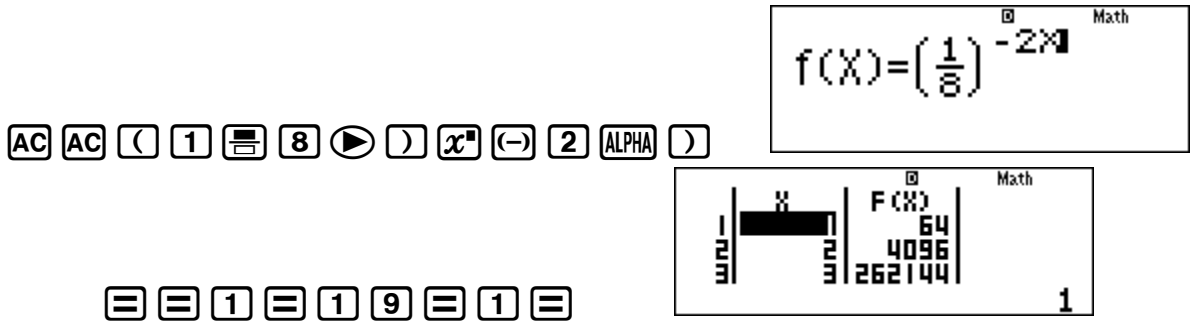
1.3 $4x^2 + 1 \geq 5x$ **(4)**



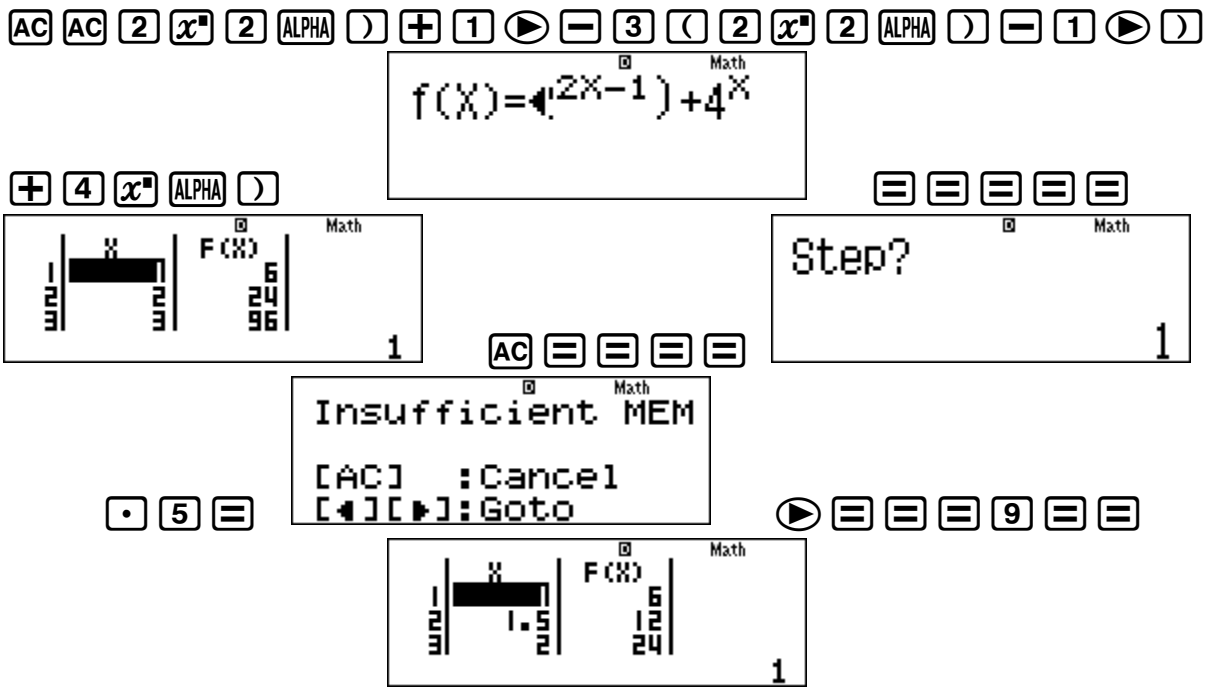
<u>Question 2</u> - EXPONENTS

Solve for x: *Using TABLE MODE on the CASIO Scientific Calculator*

2.1 $\left(\frac{1}{8}\right)^{-2x} = 64$ **(3)**



2.2 $2^{2x+1} - 3(2^{2x-1}) + 4^x = 12$ **(4)**



Question 3 – LINEAR REGRESSION

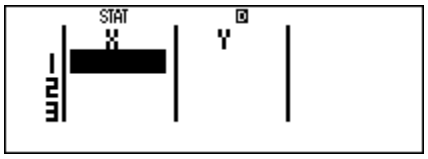
Using STAT MODE on the CASIO Scientific Calculator

A training manager wants to know if there is a relationship between the hours spent on training (x) and a specific category of employee and their productivity (units delivered per day, y)

The following data is from the files of 10 employees.

Employees	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Hours training (x)	16	36	20	38	40	30	35	22	40	24
Productivity (units delivered per day, y)	45	70	44	56	60	48	75	60	63	38

MODE 2 2



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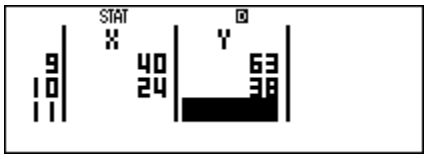
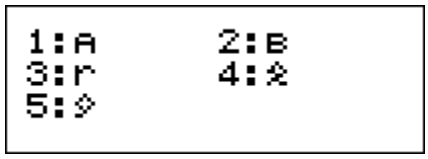
= 4 8 = 7 5 = 6 0 = 6 3 = 3 8 =



3.1 Determine the equation of the linear regression line of this data. **(2)**

AC SHIFT 1 5



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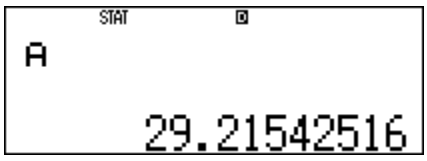
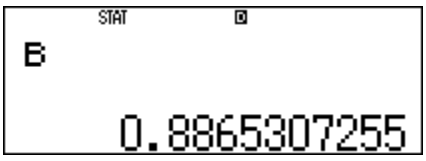


SHIFT 1 5 2 =



3.2 Use your regression equation to determine the productivity level for an employee who has received 22 hours of training. **(2)**

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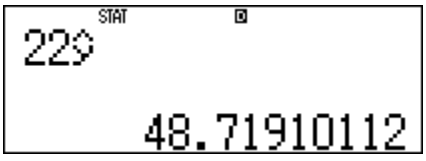

3.3 Determine the correlation between productivity and hours training. (2)

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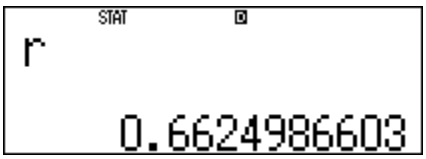


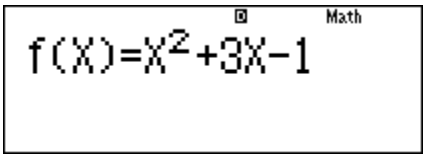
Question 4 – SEQUENCES

Using TABLE & STAT MODE on the CASIO Scientific Calculator

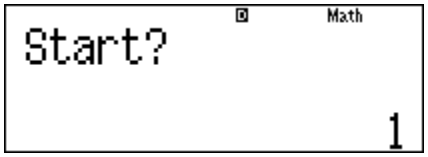
The sequence 3 ; 9 ; 17 ; 27 ; ...is a quadratic sequence.

4.1 Write down the next term. (1)

2ND



MODE 3 ALPHA) x^2 + 3 ALPHA) − 1



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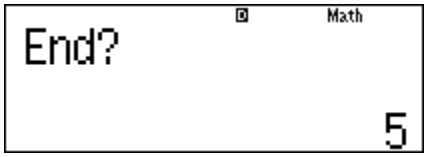

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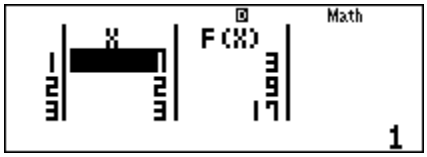
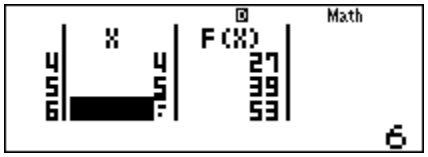
= 1 9 = =

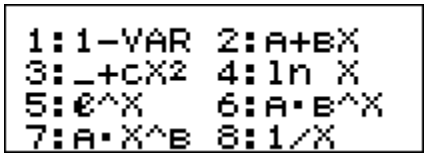




4.2 Determine the expression for the n^{th} term of the sequence. (4)

1ST

MODE 2



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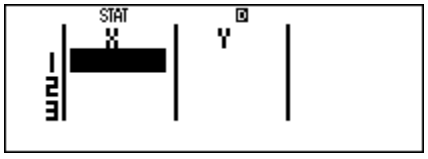
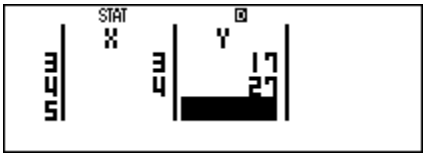
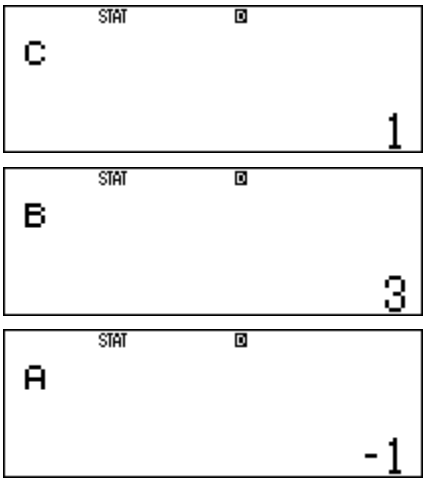


1 = 2 = 3 = 4 = ▼ ▶ 3 = 9 = 1 7 = 2 7 =



AC SHIFT 1 5 3

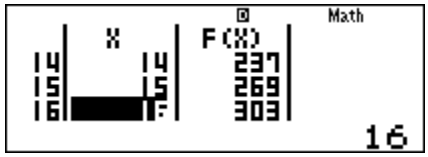


SHIFT 1 5 2 =

SHIFT 1 5 1 =

4.3 What is the value of the first term of the sequence that is greater than 269? (4)

****3RD****



Question 5 – FUNCTIONS

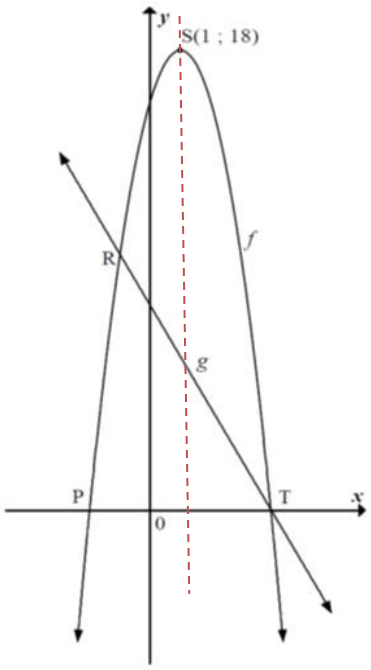
Using TABLE MODE on the CASIO Scientific Calculator

S (1;18) is the turning point of the graph of $f(x) = ax^2 + bx + c$.

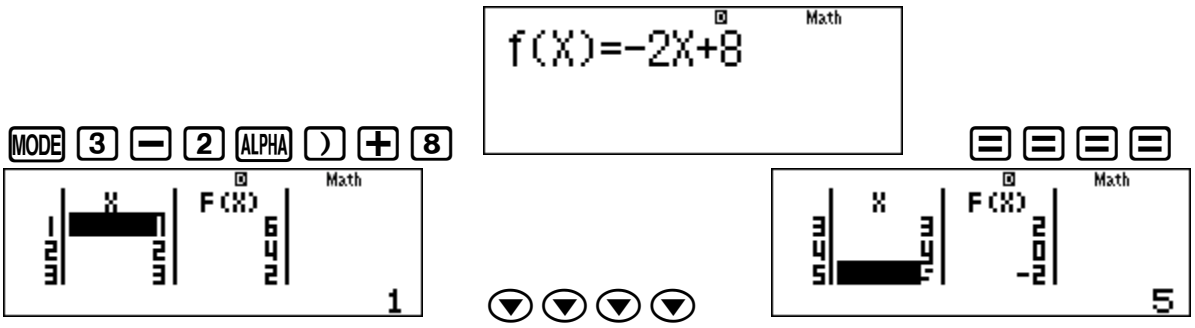
P and T are x-intercepts of f.

The graph of $g(x) = -2x + 8$ has an x-intercept at T.

R is a point of intersection of f and g.

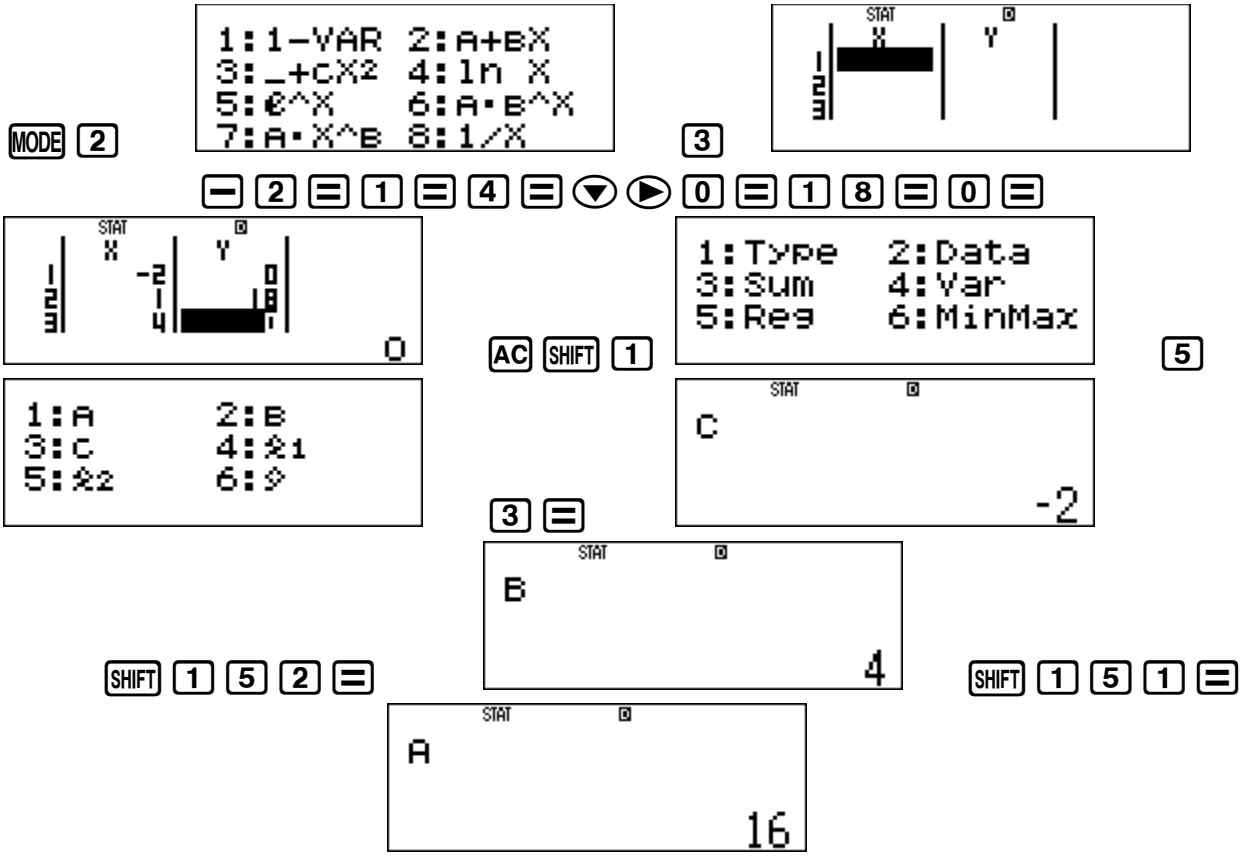


5.1 Calculate the coordinates of T. (2)

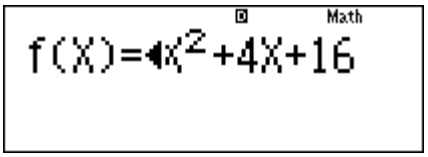


5.2 Determine the equation for f in the form $f(x) = ax^2 + bx + c$. (4)

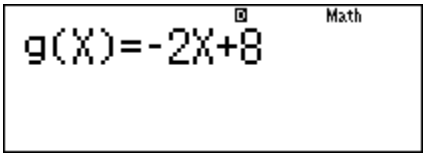
1ST Determine that point P is (-2 ; 0)



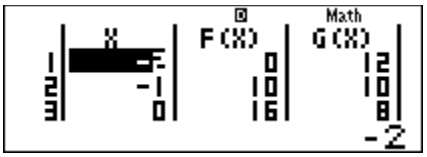
5.3 If $f(x) = -2x^2 + 4x + 16$, calculate the coordinates of R. (4)



MODE 3 (−) 2 ALPHA) x^2 + 4 ALPHA) + 1 6



= (−) 2 ALPHA) + 8



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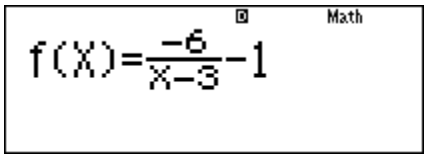
Question 6 – FUNCTIONS

Using TABLE MODE on the CASIO Scientific Calculator

Consider the function $f(x) = \frac{-6}{x-3} - 1$



AC AC ▤ − 6 ▶ ALPHA) − 3 ▶ − 1

6.1 Write down the asymptotes of f. (2)

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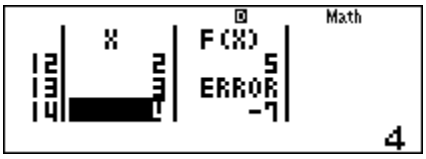
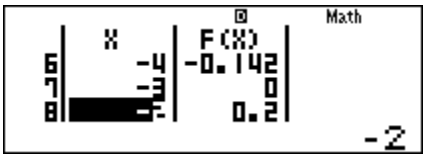
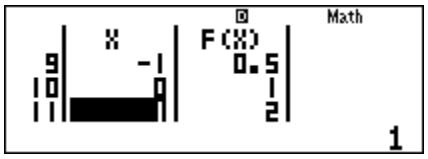
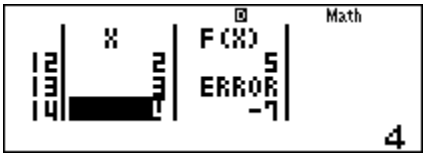


6.2 For which values of x will $f(x) > 0$. (2)





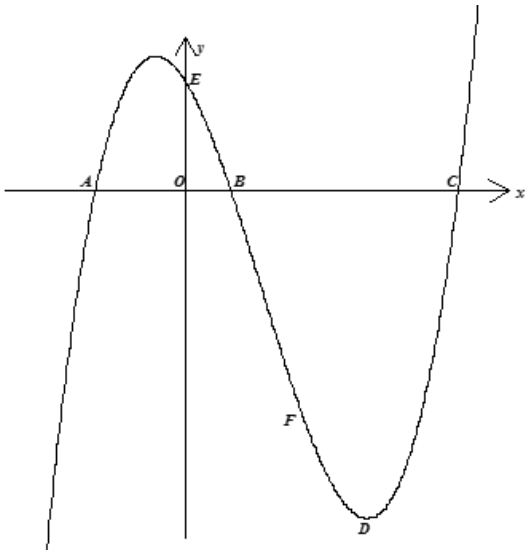


Question 7 – FUNCTIONS

Using TABLE MODE on the CASIO Scientific Calculator

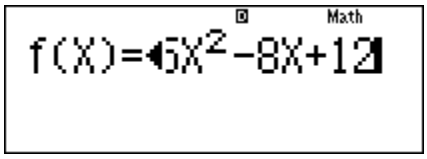
Sketched alongside the graph:

$f(x) = x^3 - 5x^2 - 8x + 12.$



Determine the coordinates of A, B and C. (5)

AC AC ALPHA) x^3 − 5 ALPHA) x^2 − 8 ALPHA) + 1 2



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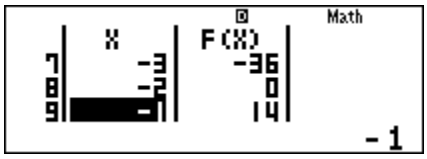

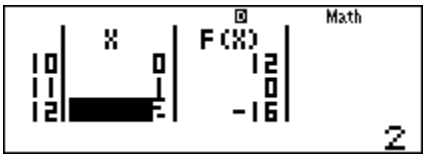

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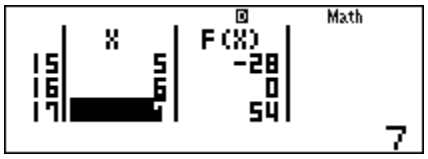

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Question 8 – FINANCIAL MATHS

Using COMP MODE on the CASIO Scientific Calculator

Thuso is a young farmer. He has just bought his first tractor for R500 650. Due to inflation, the value of the tractor depreciates at a rate of 7% p.a. on a reducing balance. Thuso knows that he will have to replace the tractor in four years' time. The price of a new tractor appreciates at 9% per annum.

8.1 Calculate the scrap value of his tractor after four years. **(3)**

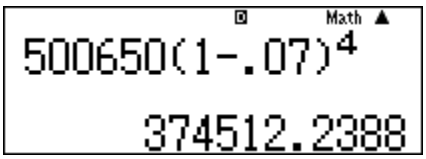
$P =$ Depreciation

$A =?$ $A = P(1 - i)^n$

$i =$

$n =$

[5] [0] [0] [6] [5] [0] [(] [1] [−] [•] [0] [7] [)] [x^n] [4] [=]



8.2 Determine the cost of a new tractor in four years' time. **(3)**

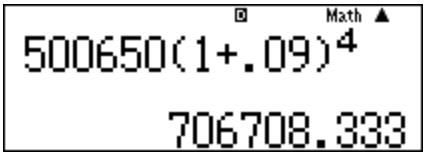
$P =$ Appreciation

$A =?$ $A = P(1 + i)^n$

$i =$

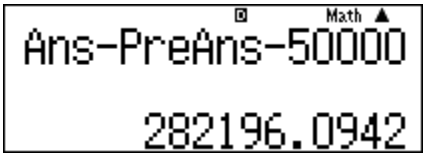
$n =$

[◀] [◀] [◀] [◀] [◀] [◀] [◀] [◀] [DEL] [+] [▶] [▶] [▶] [DEL] [9] [=]



8.3 He plans to trade in the old tractor after four years. In his budget, he makes provision for R50 000 unforeseen expenses that might occur during the transaction. How much money will he need in the sinking fund in four years' time? **(3)**

[Ans] [−] [ALPHA] [Ans] [−] [5] [0] [0] [0] [0] [=]



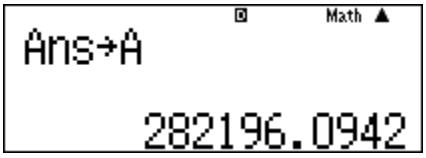
8.4 Thuso immediately starts to pay equal monthly payments into the sinking fund. The fund earns interest at 9% per annum, calculated monthly. His last payment is made at the end of the four-year period. How much does he pay every month? **(3)**

$F =$ Future Value Annuity

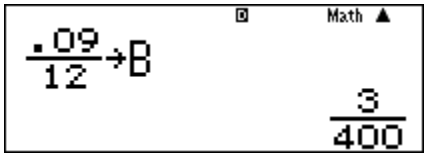
$x =?$ $F = \frac{x[(1+i)^n - 1]}{i}$

$i =$

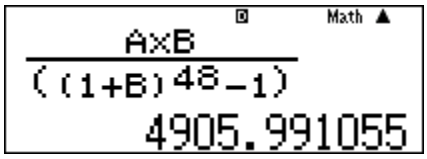
$n =$ $x = \frac{F.i}{[(1+i)^n - 1]}$



SHIFT RCL (−) • 0 9 , 1 2 SHIFT RCL ,,,



, ALPHA (−) × ALPHA ,,, ▶ ((1 +



ALPHA ,,,) x^n 4 8 ▶ − 1) =

<u>Question 9</u> – SINGLE VARIABLE DATA HANDLING

Using TABLE & STAT MODE on the CASIO Scientific Calculator

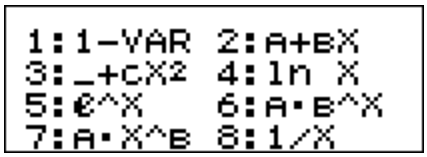
The 239 Grade 12 learners of Table Mountain High School made a survey of their hand span measurements. The results are reflected in the table below.

Measurement in cm	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10
Frequency	3	5	8	6	12	14	17	18	22	20	20

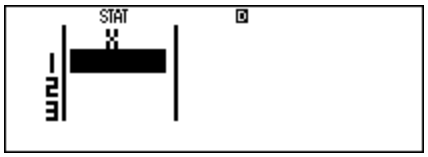
Measurement in cm	10,5	11	11,5	12	12,5	13	13,5	14	14,5	15	15,5
Frequency	18	24	16	8	7	5	5	4	4	2	1

9.1 Calculate the mean of the data, correct to one decimal place. (2)

MODE 2

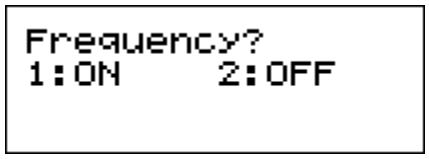


1

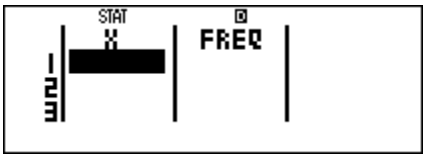


SHIFT MODE ▼

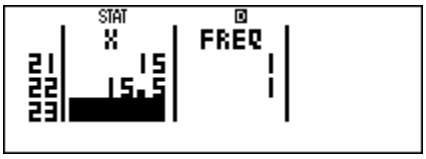
3



1

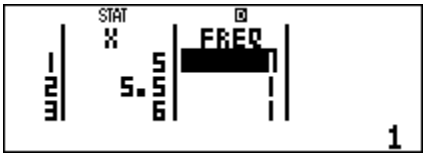


5 = 5 • 5 = 6 = 6 • 5 = 7 = 7 • 5 = 8 = 8 • 5
= 9 = 9 • 5 = 1 0 = 1 0 • 5 = 1 1 = 1 1 • 5 =
1 2 = 1 2 • 5 = 1 3 = 1 3 • 5 = 1 4 = 1 4 • 5



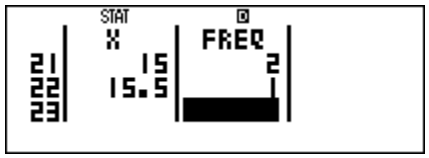
= 1 5 = 1 5 • 5 =

▼ ▶

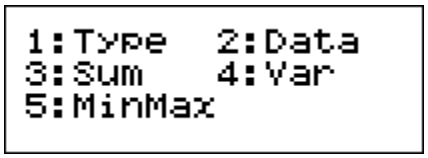


3 = 5 = 8 = 6 = 1 2 = 1 4 =

1 7 = 1 8 = 2 2 = 2 0 = 2 0 = 1 8 = 2 4 = 1 6
= 8 = 7 = 5 = 5 = 4 = 4 = 2 = 1 =



AC SHIFT 1



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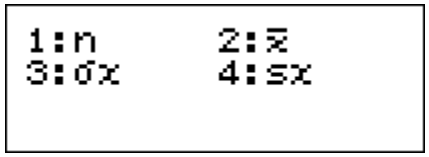

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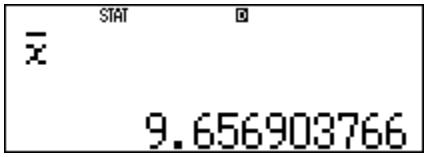
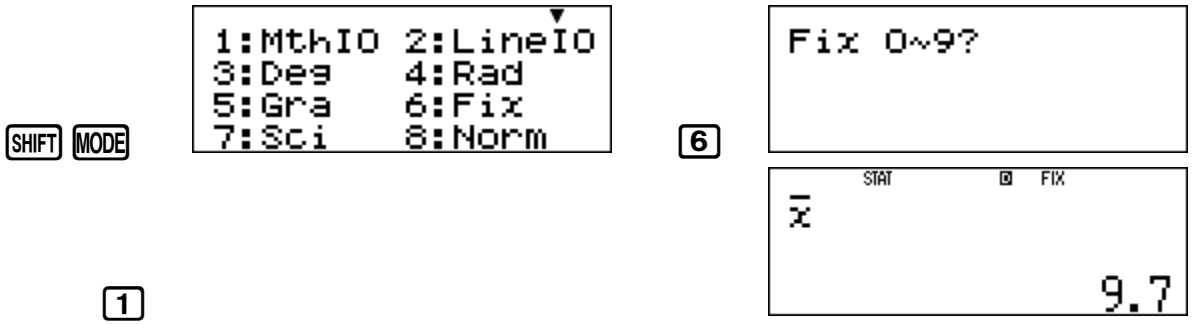
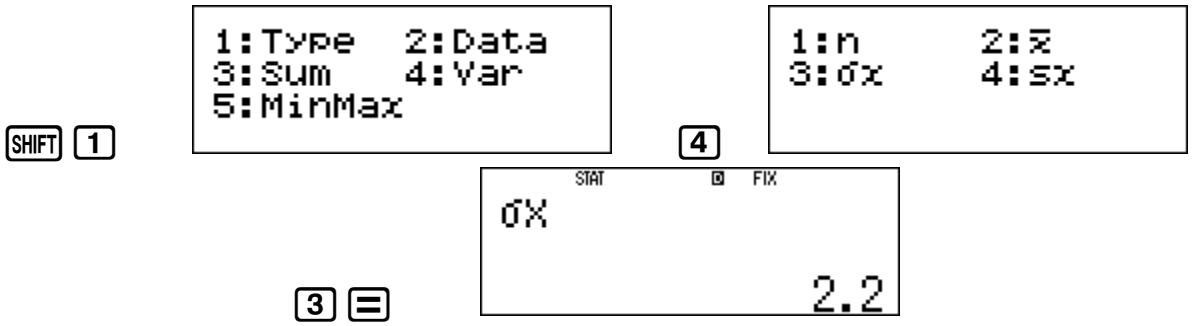




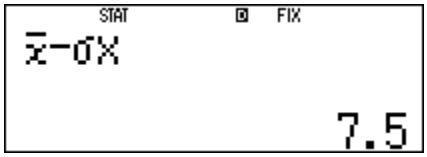
SHIFT MODE 6 1

9.2 Determine the standard deviation of the data, correct to one decimal place. (1)

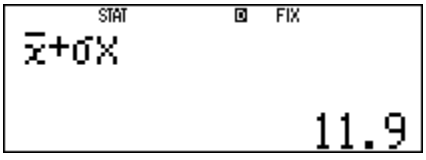


SHIFT 1 4 3 =

9.3 Determine the percentage of learners with a hand span measurement within one standard deviation from the mean. (3)

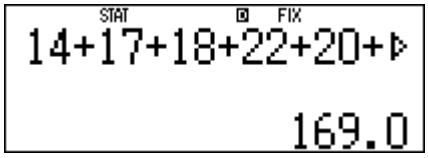


AC SHIFT 1 4 2 − SHIFT 1 4 3 =



◀ ◀ DEL + =

1 4 + 1 7 + 1 8 + 2 2 + 2 0 + 2 0 + 1 8 + 2 4



+ 1 6 =

Ans 2 3 9 SHIFT (=