

MRS21-LESSON-7

Mr. Pineda

Aim: How can we apply our knowledge to find polynomial functions to fit data in a contextual situation?

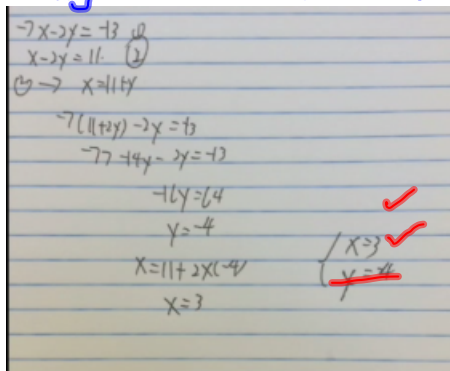
Chapter 5-8

Do now: solve the system of equations

$$\begin{cases} -7x - 2y = -13 \\ x - 2y = 11 \end{cases}$$

I- **Objective** To fit data to linear, quadratic, cubic, or quartic models

Algebraic Method: Substitution



Algebraic Method: Elimination

$$\begin{aligned} -7x - 2y &= -13 \\ +7(x - 2y) &= 77 \\ \hline -7x - 2y &= -13 \\ -7x + 14y &= 77 \\ \hline 16y &= -90 \end{aligned}$$

Handwritten algebraic elimination method showing the solution for $x=3$ and $y=-4$. The steps include multiplying the second equation by 7, subtracting the first equation from the result, and solving for $y=-4$, then substituting back to find $x=3$.

Calculator Method: Solve

	a	b	c
1	-7	-2	-13
2	1	-2	11

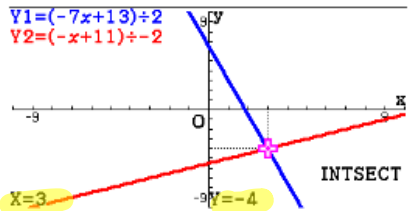
Calculator Method: Graphing

Graph Func : Y=
 Y1 = ((-7x+13)÷2) [-]
 Y2 = ((-x+11)÷-2) [-]
 Y3: [-]
 Y4: [-]

$$y = \frac{-7x + 13}{-2}$$

$x - 2y = 11$
to solve for y:

$$y = \frac{-x + 11}{-2}$$



1- You can use a graphing calculator to help you find functions that model the data in the table shown here.

x	y
0	10.1
5	2.8
10	8.1
15	16.0
20	17.8



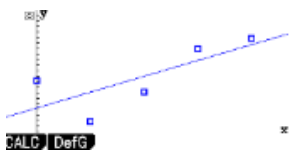
Scatter Plot

+ I need to find an equation to help me find the behavior of the two variables.

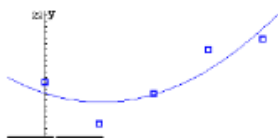
Instructions in the Calculator – Casio FX-9750

- 1) Menu 2
- 2) Use list 1 and list 2 to enter x/y respectively
- 3) F1 Graph
- 4) F6 Set – on Graph 1 select Scatter plot.
- 5) F2 Graph 2 – Select Linear plot.
- 6) F4 Set. To make sure Graph 1 and 2 are both on the press F6
- 7) F6 change Graph 2 for Quadratic plot
- 8) Repeat step 6
- 9) F6 change Graph 2 for Cubic
- 10) Repeat step 6

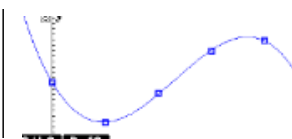
Hidden Figures



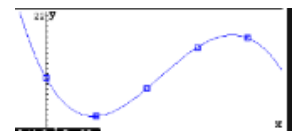
Linear
 $y = x$



Quadratic
 $y = x^2$



Cubic
 $y = x^3$



Quartic
 $y = x^4$

Very good possibilities

2) Which graph had a best fit for our set of data? *Cubic or Cuadratic*

3) Work in Groups –

Find a polynomial function that best models each set of values.

8. Let $x = 0$.

9. Let $x =$ the number of years since 1950. 0

Life Expectancy

<i>list 1</i> Exact Age	<i>list</i> Male (years)
5 <i>5</i>	70.5
10 <i>10</i>	65.6
15 <i>15</i>	60.6
20 <i>20</i>	55.9

list 1 **World Silver** *list*

<i>list 1</i> Year	<i>list</i> Production (metric tons)
1950 <i>0</i>	6323
1955 <i>5</i>	9967
1960 <i>10</i>	7505
1965 <i>15</i>	8007

Complete both questions on your own.

