

PRE-AP ALGEBRA 2

HOMEWORK #1A

Lesson 1A.1:

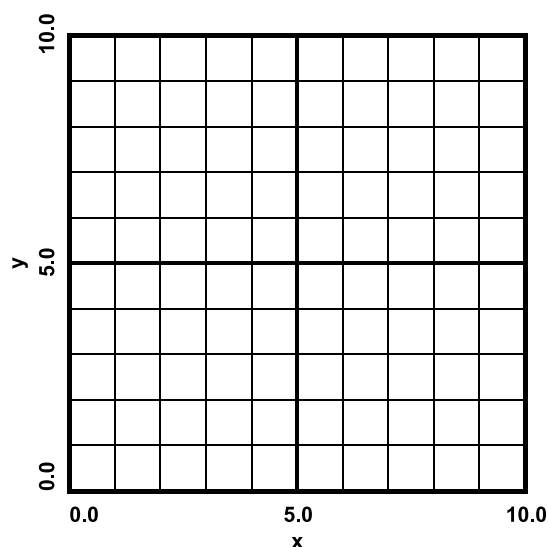
- 1) Algebraically, find the equation of the line which passes through the two points $(-2,7)$ and $(4,-5)$.

Lesson 1A.2:

- 2) a) Graph the points in the table on the set of axes below.

x	y
1	2
3	3
5	5
7	6
9	7

- b) Find the linear regression equation for the points in the table. Also find the values of r and r^2 .
- c) State whether the correlation is positive or negative, and whether there is little correlation or good correlation.
- d) Graph the linear regression equation on the axes below.



- 3) a) Verify your answer to problem 1 using linear regression with the two given points.
- b) $r^2 = ?$ What does the r^2 -value mean?

Lesson 1A.3:

- 4) Algebraically, find the equation of the parabola which passes through the points $(0,9)$, $(4,1)$ and $(6,3)$.

- 5) Use quadratic regression to verify your answer from problem 4. Also find r^2 . What is the meaning of the r^2 -value?

- 6) For the parabola $y = \frac{1}{2}x^2 - 4x + 9$:

- a) Fill in the table with the function values.

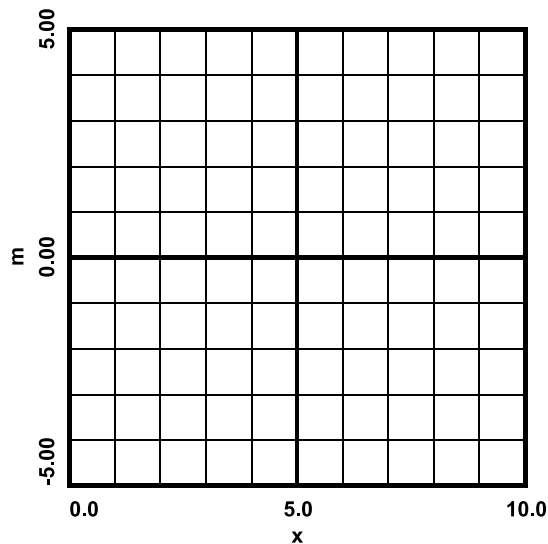
x	y
0	
2	
4	
6	
8	
10	

- b) Calculate the slopes of the parabola at the indicated x -values, *i.e.*, fill in the table.

x	m
1	
3	
5	
7	
9	

PRE-AP ALGEBRA 2

- c) Graph the points from the table in part **b** on the axes below.



- d) What is the linear equation which represents the slope of the parabola?

Lesson 1A.4:

- 7) Solve $8x^2 + 22x - 21 = 0$ for x using the Quadratic Formula.

Lesson 1A.5:

- 8) Little Larry tosses a tennis ball upward from the balcony of his fourth-floor apartment, which is 42 feet above street level. The initial upward velocity of the ball is 30 ft/sec. How long after he tosses the ball does it hit the street?

Lesson 1A.6:

- 9) Algebraically, find the exponential equation which passes through the two points (2, 22.050 00) and (5, 204.205 05).
- 10) Verify your answer to problem 9 by using exponential regression on the two given points. What is the meaning of the resulting r^2 -value?

HOMEWORK #1A

- 11) In 2000, the population of Aurora, IL was 144,174 people. In 2020 it was 180,355. Estimate the population of Aurora in the year 2035. In the equation $p = a \cdot b^t$, what is the meaning of b ?
- 12) Every 8 days, half of a sample of Iodine-131 will decay. Initially, there is 20 grams of Iodine-131. After 25 days, how many grams of the original sample will have decayed? In the equation $g = a \cdot b^t$, what is the meaning of b ?

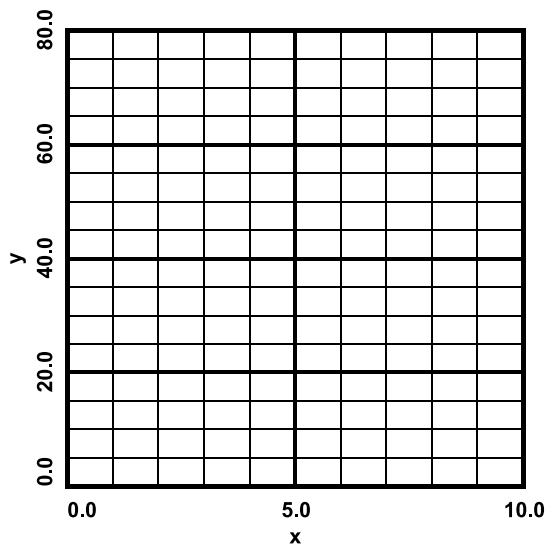
Lesson 1A.7:

For problems 13 and 14:

- a) Graph the xy -points on the grid provided.
- b) Use the points to calculate both the quadratic regression and exponential regression equations. Also, find r^2 for each equation.
- c) Graph the more accurate of the equations on the grid.

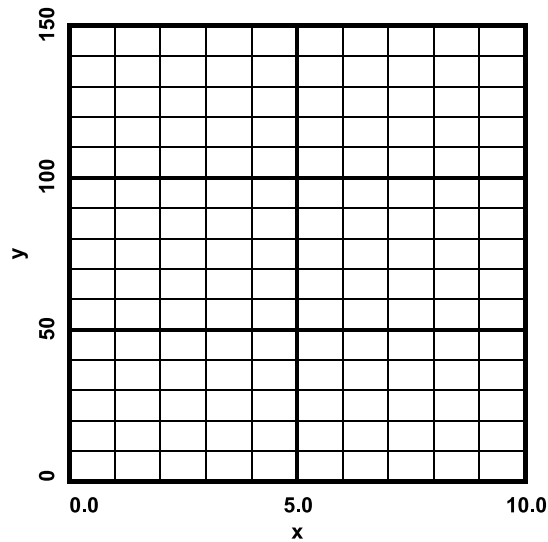
13)

x	y
1	4.5
3	8.8
5	17.2
7	33.7
9	66.1



14)

x	y
1	3.8
3	20.1
5	46.6
7	83.5
9	131.2

*Lesson 1A.8:*For problems **15** through **17**:

- a)** State whether the equation is linear, quadratic, or exponential.
- b)** In terms of the given variables, write down the equation for the situation.

- 15)** Paul drops a rock off of a 300 foot-tall cliff.

$y \equiv$ height of rock in feet

$t \equiv$ time in seconds

- 16)** Jake deposits \$5000 into a savings account yielding 2.5% quarterly interest.

$m \equiv$ money in the bank

$t \equiv$ time in years

- 17)** The Stone Yard sells gravel for \$50 per yd^3 with a \$125 delivery charge.

$c \equiv$ cost in dollars

$g \equiv$ cubic feet of gravel purchased