**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Advanced Algebra II – Assignment 1-4**

2-13 Jill is studying a strange bacterium. When she first looks at the bacteria, there are 1,000 cells in her sample. The next day, there are 2,000 cells. Intrigued, she comes back the next day to find there are 4,000 cells! Create a table, graph and equation to model this situation. The inputs are days that have passed and the outputs are the number of cells of bacteria.

|  |  |
| --- | --- |
| Day | # of Cells |
| -2 |  |
| -1 |  |
| 0 | 1,000 |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |

Graph of Number of Bacteria as a Function of Days After Initial Observation

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

 Day

Equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2-24 For each table below, find the missing entries and write a rule.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Month (x) | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Population (y) | 2 | 8 | 32 |  |  |  |  |

y = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Year (x) | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Population (y) | 5 | 6 | 7.2 |  |  |  |  |

y = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2-39 Lona received a copy of her stamp collection from her grandmother. The collection is in a leather book and currently has 120 stamps. Lona joined a stamp club which sends her 12 stamps each month. The stamp book holds a maximum of 500 stamps.

a. Complete the table.

|  |  |
| --- | --- |
| Month | Stamps |
| 0 | 120 |
| 1 | 132 |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |

b. How many stamps will Mona have after one year?

c. Write an equation to represent the total number of stamps in Lona’s collection after *n* months. Let the total be represented by t(n).

 t(n) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d. Solve the equation for t(n) = 500. Will Lona be able to fill her book with no stamps remaining? How do you know? When will the book be filled?

**Review of Simultaneous Equations**

1. Solve by graphing:

y = 2x +4

y = 

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

1. Solve by substitution:

a. y = x + 3 b. 4x + 2y = 30

 y = 2x – 4 y = x – 2

1. Solve by elimination:

a. 2x + y = 8 b. 2y – 4x = 18

 x - y = 10 -5x + 3y = 23