For each data set below, determine the mathematical expression. To do this, first graph the original data. Assume the 1st column in each set of values to be the **independent** variable and the 2nd column the **dependent** variable. Then taking clues from the shape of the first graph, modify the data so that the modified data will plot as a straight line. Using the slope and y-intercept from the linear fit, write an appropriate mathematical expression for the relationship between the variables. Be sure to include units!

Data Set 1:

|  |  |
| --- | --- |
| **V** **(m3)** | **P** **(pa)** |
| .1 | 40 |
| .5 | 8 |
| 1 | 4 |
| 2 | 2 |
| 4 | 1 |
| 5 | .8 |
| 8 | .5 |
| 10 | .4 |

Mathematical Model #1:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Data Set 3:

|  |  |
| --- | --- |
| **A (months)** | **W** **(lbs)** |
| 1 | 7.3 |
| 2 | 9.4 |
| 3 | 10.5 |
| 4 | 12.0 |
| 5 | 13.0 |
| 6 | 14.3 |
| 7 | 15.2 |
| 8 | 16.7 |

Mathematical Model #3:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Data Set 2:

|  |  |
| --- | --- |
| **t** **(s)** | **x** **(m)** |
| .1 | .03 |
| .2 | .12 |
| .5 | .75 |
| 1 | 3 |
| 2 | 12 |
| 3 | 27 |
| 4 | 48 |
| 5 | 75 |

Mathematical Model #2:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Data Set 4:

|  |  |
| --- | --- |
| **t** **(s)** | **v** **(m/s)** |
| .3 | 10 |
| 1.2 | 20 |
| 2.7 | 30 |
| 4.8 | 40 |
| 7.5 | 50 |
| 10.8 | 60 |
| 14.7 | 70 |
| 19.2 | 80 |

Mathematical Model #4:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Data Set 5:

|  |  |
| --- | --- |
| **R** **(a.u.)** | **T****(yr)** |
| .38 | .24 |
| .72 | .62 |
| 1.00 | 1.00 |
| 1.52 | 1.88 |
| 5.19 | 11.9 |
| 9.53 | 29.5 |
| 19.1 | 84.1 |
| 30.0 | 165 |
| 39.4 | 249 |

Mathematical Model #5:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Data Set 6:

|  |  |
| --- | --- |
| **r****(m)** | **Fel****(N)** |
| .2 | 425 |
| .5 | 68.3 |
| 1.0 | 16.5 |
| 2.0 | 4.26 |
| 5.0 | 0.67 |
| 10. | 0.18 |
| 20. | 0.042 |
|  |  |

Mathematical Model #6:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_