POPULATION GROWTH OF THE UNITED STATES

PART A: Historical Data

Find a reliable internet source for population statistics to complete the table below.

|  |  |
| --- | --- |
| Years since 1900 (t) | Population (P) in millions of people |
| **0** |  |
| **10** |  |
| **20** |  |
| **30** |  |
| **40** |  |
| **50** |  |
| **60** |  |
| **70** |  |
| **80** |  |
| **90** |  |
| **100** |  |
| **110** |  |

PART B: Linear Model: Population (P) vs. year (t)

Enter the equation of the line of best fit below. Be sure to use P for population and t for years since 1900. Then complete the chart below using the equation for the line of best fit.

*Line of Best Fit*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| Years since 1900 (t) | Population (P) in millions of people |
| **0** |  |
| **10** |  |
| **20** |  |
| **30** |  |
| **40** |  |
| **50** |  |
| **60** |  |
| **70** |  |
| **80** |  |
| **90** |  |
| **100** |  |
| **110** |  |

PART C: Error Estimation of the Linear Model

Enter the formula used to calculate the error of the model here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| **Years since 1900 (t)** | **Population (P)** |
| 0 |  |
| 10 |  |
| 20 |  |
| 30 |  |
| 40 |  |
| 50 |  |
| 60 |  |
| 70 |  |
| 80 |  |
| 90 |  |
| 100 |  |
| 110 |  |
| **average error:** |  |

PART D: Exponential Model: Population (p) vs. year (t)

Enter the equation of the exponential curve of best fit here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| **Years since 1900 (t)** | **Population (P)** |
| 0 |  |
| 10 |  |
| 20 |  |
| 30 |  |
| 40 |  |
| 50 |  |
| 60 |  |
| 70 |  |
| 80 |  |
| 90 |  |
| 100 |  |
| 110 |  |

PART E: Error Estimation of the Exponential Model

Enter the formula used to calculate the error of the model here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| **Years since 1900 (t)** | **Population (P)** |
| 0 |  |
| 10 |  |
| 20 |  |
| 30 |  |
| 40 |  |
| 50 |  |
| 60 |  |
| 70 |  |
| 80 |  |
| 90 |  |
| 100 |  |
| 110 |  |
| **average error:** |  |