**Exponential Regression Practice Name:**

At the end of this practice you should be able to use your calculator to create an exponential equation to match a table. You must have a calculator to complete this assignment. Answer choices are found at the end to check your work.

**Example #1:** Create a y= equation to match table #1. This first example is completed for you:

**Table #1**

|  |  |
| --- | --- |
| **x** | **y** |
| 0 | 400 |
| 1 | 460 |
| 2 | 529 |
| 3 | 608.35 |

* Step 1: Hit STAT Hit “1: Edit”
* Step 2: Type the x values under L1 and y values under L2.
* Step 3: Hit STAT > Hit “0: ExpReg”
* Hit enter until your screen looks like the screen shot to the right:

Use this information to create an equation in the form $y=a(b)^{x}$

**For Example #1🡪** $y=$ **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Does this equation model growth or decay? GROWTH DECAY
2. What is the start-value/y-intercept for this function? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What percent is this table increasing/decreasing by? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Based on the equation you created, what would be the account balance after 7 years? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How long would it take the money in the account to double? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Example #2:** Create a y= equation to match table #2. Hit 2nd + 7 1 2 to clear your calculator.

**Table #2**

|  |  |
| --- | --- |
| **x** | **y** |
| 0 | 250 |
| 1 | 355 |
| 2 | 504.1 |
| 3 | 715.82 |

* Step 1: Hit STAT Hit “1: Edit”
* Step 2: Type the x values under L1 and y values under L2.
* Step 3: Hit STAT > Hit “0: ExpReg”

Use this information to create an equation in the form $y=a(b)^{x}$

**For table #2 🡪 y = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Does this equation model growth or decay? GROWTH DECAY
2. What is the start-value/y-intercept for this function? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What percent is this table increasing/decreasing by? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Based on the equation you created, what would be the account balance after 11 years? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How long would it take the money in the account to double? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Example #3:** Create a y= equation to match table #3. Hit 2nd + 7 1 2 to clear your calculator.

**Table #3**

|  |  |
| --- | --- |
| **x** | **y** |
| 0 | 1,000 |
| 1 | 850 |
| 2 | 722.5 |
| 3 | 614.13 |

* Step 1: Hit STAT Hit “1: Edit”
* Step 2: Type the x values under L1 and y values under L2.
* Step 3: Hit STAT > Hit “0: ExpReg”

Use this information to create an equation in the form $y=a(b)^{x}$

**For table #3 🡪 y = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Does this equation model growth or decay? GROWTH DECAY
2. What is the start-value/y-intercept for this function? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What percent is this table increasing/decreasing by? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Based on the equation you created, what would be the account balance after 9 years? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How long would it take the account balance to reach ½ of its starting value? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Example #4**: Create a y= equation to match table #4. Hit 2nd + 7 1 2 to clear your calculator.

**Table #4**

|  |  |
| --- | --- |
| **x** | **y** |
| 0 | 900 |
| 1 | 981 |
| 2 | 1069.29 |
| 3 | 1165.53 |

* Step 1: Hit STAT Hit “1: Edit”
* Step 2: Type the x values under L1 and y values under L2.
* Step 3: Hit STAT > Hit “0: ExpReg”
* Hit enter until your screen looks like the screen shot to the right:

Use this information to create an equation in the form $y=a(b)^{x}$

**For table #4 🡪 y = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Does this equation model growth or decay? GROWTH DECAY
2. What is the start-value/y-intercept for this function? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What percent is this table increasing/decreasing by? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Based on the equation you created, what would be the account balance after 5 years? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How long would it take the money in the account to double? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Example #5:** The table below represents the populations of zebras in a herd. Let x represent the number of years since 1990. **(DON’T TYPE THE YEAR UNDER L1, JUST HOW MUCH TIME HAS PASSED SINCE 1990).** Since we’re dealing with zebras, round the a value to the nearest whole number)

**Table #5**

|  |  |
| --- | --- |
| **Year** | **# of Zebras** |
| 1990 | 1,000 |
| 1993 | 512 |
| 1996 | 262 |
| 2000 | 134 |

**For table #5 🡪 y = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Does this equation model growth or decay? GROWTH DECAY
2. What is the start-value/y-intercept for this function? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What percent is this table increasing/decreasing by? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Based on the equation you created, how many zebras would there be after 10 years? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. When will there be half the original number of zebras remaining? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Example #6:** The table below represents the population of Star, Nevada x years after 2000. **(DON’T TYPE THE YEAR UNDER L1, JUST HOW MUCH TIME HAS PASSED SINCE 2000).** Since we’re dealing with people, round the a value to the nearest whole number)

**Table #6**

|  |  |
| --- | --- |
| **Year** | **# of People** |
| 2000 | 1,000 |
| 2004 | 512 |
| 2009 | 262 |
| 2011 | 134 |

**For table #6 🡪 y = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Does this equation model growth or decay? GROWTH DECAY
2. What is the start-value/y-intercept for this function? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What percent is this table increasing/decreasing by? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What would be the population of the town in 2015? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How many years will it be before the town’s population doubles? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Answer Choices:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$y=1000\left(0.85\right)^{x}$$ | $$y=250\left(1.42\right)^{x}$$ | $$y=900\left(1.09\right)^{x}$$ | $$y=955\left(0.82\right)^{x}$$ | $$y=1028\left(0.84\right)^{x}$$ |
| $$3.493 years$$ | $$8.043 years$$ | $$3.976 years$$ | $$4.265 years$$ | $$1.977 years$$ |
| $$75$$ | $$\$1,384.76$$ | $$\$11,833.46$$ | $23$**.16** | $$131$$ |
| $$9\%$$ | $$42\%$$ | $$15\%$$ | $$16\%$$ | $$18\%$$ |
| $$955$$ | $$250$$ | $$900$$ | $$1,000$$ | $$1,028$$ |