**III. Growth Modeled by a Radical Equation:**

Suppose instead that the town experiences growth that can be modeled by the following:  where *t* is the number of years from 2010.

a) Insert the value of that your group has decided upon into the equation above. Use the Equation Editor or type square root of *t* as sqrt(*t*).

Answer:

b) Fill in the following chart. Round to the nearest whole person when necessary.

|  |  |
| --- | --- |
| Year (*t*) | Population (*P*) |
| *t* = 0  (2010) | \_\_\_\_\_\_\_ |
| *t* = 1  (2011) |  |
| *t* = 2  (2012) |  |
| *t* = 3  (2013) |  |
| *t* = 6  (2016) |  |

c) Use your equation from part a) to approximate how many years it would take for the population to reach 12,000. Round the nearest whole year when necessary.

Answer:

Show your work here:

d) Graph this function in MS Excel by plotting the points found in your chart in part b. You may also use another web-based graphing utility. Label your axes with *time* on the *x*-axis and *population* on the *y*-axis. Copy and paste your graph here:

Answer:

**IV. Population Decline Modeled by a Rational Equation:**

Suppose instead that the town experiences population decline that can be modeled by the following: where *t* is the number of years from 2010.

a) Insert the value of that your group has agreed to use.

Type as () / (*t* + 1) or use the Equation Editor.

Answer:

b) Fill in the following chart. Round to the nearest whole person when necessary.

|  |  |
| --- | --- |
| Year (*t*) | Population (*P*) |
| *t* = 0  (2010) | \_\_\_\_\_\_\_\_ |
| *t* = 1  (2011) |  |
| *t* = 2  (2012) |  |
| *t* = 3  (2013) |  |
| *t* = 6  (2016) |  |

c) Use your equation from part a) to approximate how many years it would take for the population to reach 400. Round to two decimal places if necessary.

Answer:

Show your work here:

d) Graph this function in MS Excel by plotting the points in the chart in part b. You may also use another web-based graphing utility. Label your axes with *time* on the *x*-axis and *population* on the *y*-axis. Copy and paste graph here:

Answer:

**V.**

Suppose that the mayor of the town you have chosen has built a new factory in hopes of drawing as many new people to the town as possible. Which one of the four models would the mayor hope that the population would follow? Explain.