Precalculus: Exponential Function

Name _____ **Date** _____

Finding Equations of Exponential Functions

(1) A car was valued at $46,000 in the year 1989. The value depreciated to $36,370 by the year 1996. Assume that the car value continues to drop by the same percentage. What was the value in the year 2017?

(2) A car was valued at $24,000 in the year 1990. The value depreciated to $20,491 by the year 1996. Assume that the car value continues to drop by the same percentage. What was the value in the year 2019?

(3) Find a formula for an exponential function y=f(x) passing through the two points A and B and find the drop rate where A = (0,95), B = (2,13).

(4) Find a formula for an exponential function y=f(x) passing through the two points A and B and find the grow rate where A = (-1,17), B = (0,36).

(5) Find a formula for an exponential function y=f(x) passing through the two points A and B and find the drop rate where A = (-1,24), B = (-2,96).

(6) Find a formula for an exponential function y=f(x) passing through the two points A and B and find the grow rate where A = (0,27), B = (5,86).

(7) A radioactive substance decays exponentially. A scientist begins with 858 mg of a radioactive substance. After 39 hours, 479 mg of the substance remains. How many mg will remain after 44 hours?

Answers

Finding Equations of Exponential Functions

(1) A car was valued at $46,000 in the year 1989. The value depreciated to $36,370 by the year 1996. Assume that the car value continues to drop by the same percentage. What was the value in the year 2017?

$17,976

(2) A car was valued at $24,000 in the year 1990. The value depreciated to $20,491 by the year 1996. Assume that the car value continues to drop by the same percentage. What was the value in the year 2019?

$11,179

(3) Find a formula for an exponential function y=f(x) passing through the two points A and B and find the drop rate where A = (0,95), B = (2,13).

$y = 95.0000 \cdot (0.3699)^x$. drop rate = 63.01%

(4) Find a formula for an exponential function y=f(x) passing through the two points A and B and find the grow rate where A = (-1,17), B = (0,36).

$y = 36.0000 \cdot (2.1176)^x$. grow rate = 111.76%

(5) Find a formula for an exponential function y=f(x) passing through the two points A and B and find the drop rate where A = (-1,24), B = (-2,96).

$y = 6.0000 \cdot (0.2500)^x$. drop rate = 75.00%

(6) Find a formula for an exponential function y=f(x) passing through the two points A and B and find the grow rate where A = (0,27), B = (5,86).

$y = 27.0000 \cdot (1.2607)^x$. grow rate = 26.07%

(7) A radioactive substance decays exponentially. A scientist begins with 858 mg of a radioactive substance. After 39 hours, 479 mg of the substance remains. How many mg will remain after 44 hours?

444.51 mg