Rationals	Exponential	Logarithm	Log Prop	Grab Bag
100	100	100	100	100
200	200	200	200	200
300	300	300	300	300
400	400	400	400	400
500	500	500	500	500

Rational

100

What is the domain of $f(x) = \frac{x^2-16}{x^2-x-6}$?

Question
Answer

Done!
Home

Rational	100

$$(-\infty, -2) \cup (-2, 3) \cup (3, \infty)$$

Question Answer	Done! Home

Rational

200

What are the zeros of $f(x) = \frac{x^2-25}{x^2+x-6}$?

Question
Answer

Done!
Home

$(5, 0)$ and $(-5, 0)$

Rational

300

Find all asymptotes of the equation $f(x) = \frac{5x-15}{x-4}$.

Question
Answer

Done!
Home

Rational

300

Horizontal: $y = 5$

Vertical: $x = 4$

Question

Answer

Done!

Home

Rational

400

Determine the equation for a rational function if the x-intercept of the function is $(4, 0)$, the $y-$intercept is $(0, -2)$, and the equations of the asymptotes are $y = -1$ and $x = 2$.

Question
Answer

Done!
Home

Rational

400

$$y = \frac{-x+4}{x-2}$$

Question
Answer

Done!
Home

Rational

500

A T-shirt manufacturer has found the cost of running their business to be \$6 per T-shirt and has overhead costs of \$1,300. Write a function that represents the average cost for producing x T-shirts.

Question
Answer

Done!
Home

Rational

500

$$y = \frac{6x+1300}{x}$$

Question
Answer

Done!
Home

Exponential

100

Let $f(x) = 3 \cdot \left(\frac{5}{3}\right)^x + 3$. What is the range of $f(x)$?

Question
Answer

Done!
Home

$(3, \infty)$

Exponential

200

How much money should you invest at 7.5% compounded quarterly so that you have $10,000 after 5 years?

Question
Answer

Done!
Home

Exponential

200

$1,856.78$

Question
Answer

Done!
Home

Exponential

300

A piece of machinery, initially purchased for \$25,000 decreases in value by 1.4% per year. Determine a model of the form $y = C \cdot b^x$ that can be used to predict the value of this machinery if x is measured in years.

Question
Answer

Done!
Home

$$y = 25,000(0.986)^x$$

Exponential

400

A species of snake was introduced in an area 10 years ago. It is estimated that there are 3,500 snakes in the area now, and the population has a continuous exponential growth rate of 7% per year. How many snakes will there be 20 years from now?

Question
Answer

Done!
Home

Exponential

400

14,193 snakes will be present 20 years from now.

Question
Answer

Done!
Home

Exponential

500

What is the doubling time for a population of rabbits that grows from 60 to 500 in 18 months?

Question
Answer

Done!
Home

Exponential

500

5.885 months

Question
Answer

Done!
Home

Logarithm

100

Write the following as a logarithm:

$$245^{\frac{1}{2}} = x$$

Question
Answer

Done!
Home

Logarithm

100

$$\log_{245}(x) = \frac{1}{2}$$

Question
Answer

Done!
Home

Logarithm

200

What is the domain of $\log_3(x + 11)$?.

Question
Answer

Done!
Home

$(-11, \infty)$

Logarithm

300

Solve the equation $3\log_2(x) = 4$.

Question
Answer

Done!
Home

$x = 2.52$

Logarithm

400

A pork roast is removed from a freezer that is 22°F and placed in a room that is 77°F. The number of minutes that it takes the temperature of the roast to reach x degrees Fahrenheit is given by the formula $T = \frac{100}{3} \ln\left(\frac{50}{77-x}\right)$. If 20 minutes have passed, what is the temperature of the pork roast?

Question
Answer

Done!
Home

Logarithm

400

Approximately 50 minutes have elapsed since the pork roast was removed from the freezer.

Question
Answer

Done!
Home

Logarithm

500

Solve for x.

$$\frac{e^x + 5}{e^3 x} = e^{x-1}$$

Question
Answer

Done!
Home

Logarithm

500

$x = 2$

Question
Answer

Done!
Home

Log Prop

100

Expand as far as possible $\ln\left(\frac{e^2}{3}\right)$

Question
Answer

Done!
Home

$2 - \ln(3)$

Log Prop

200

Write as a single logarithm: $\ln(x) + \frac{1}{3}\ln(27) - \ln(y) + \ln(z)$

Question
Answer

Done!
Home

Log Prop

200

$$\ln\left(\frac{27^{\frac{1}{3}}xz}{y}\right)$$

Question
Answer

Done!
Home

Log Prop

300

Expand as far as possible: $\log_5\left(\frac{ab^2}{5cd}\right)$

Question
Answer

Done!
Home

Log Prop

300

$$\log_5(a) + 2\log_5(b) - 1 - \log_5(c) - \log_5(d)$$

Question
Answer

Done!
Home

Log Prop

400

Write as a single logarithm: $\log_7(x) - \log_7(3) + 4\log_7(y) - 1$

Question
Answer

Done!
Home

Log Prop

400

$$\log_7\left(\frac{xy^4}{21}\right)$$

Question
Answer

Done!
Home

Log Prop

500

Solve the following for x

$$\log(2x+1) - \log(x-2) = 1$$

Question
Answer

Done!
Home

Log Prop

500

$$x = \frac{21}{8}$$

Question
Answer

Done!
Home

Suppose a cost-benefit model is given by $T = f(x) = \frac{22x}{100-x}$, where T is the time in minutes, to memorize x random facts. Approximately how many facts can be memorized if a person studies for 30 minutes?

(a) Less than 15 facts

(b) Between 15 and 30 facts

(c) Between 30 and 45 facts

(d) Between 45 and 60 facts

(e) More than 60 facts

(d) Between 45 and 60 facts

Determine a formula for the exponential function of the form $y = C \cdot b^x$ that passes through the points $(-1, 3)$ and $(2, 192)$.

(a) $y = 12 \cdot 4^x$

(b) $y = 3 \cdot 64^x$

(c) $y = 3 \cdot 63^x$

(d) $y = 3 \cdot 8^x$

$(a)\ y = 12 \cdot 4^x$

Determine a formula for the inverse function, $f^{-1}(x)$ for $f(x) = 2^{x-5}$.

(a) $f^{-1}(x) = 5^{x+2}$

(b) $f^{-1}(x) = \log_2(x+5)$

(c) $f^{-1}(x) = \log_2(x-5)$

(d) $f^{-1}(x) = \log_2(x) + 5$

(e) $f^{-1}(x) = 2^{x+5}$

$(d)\ f^{-1}(x) = \log_2(x) + 5$

Solve the equation:

$$\log_9(x-3) + \log_9(2x+1) = 1$$

(a) $x = -\frac{3}{2}, 4$ only
(b) $x = \frac{11}{3}$ only
(c) $x = -\frac{1}{2}, 3$ only
(d) $x = 3$ only
(e) $x = 4$ only

(e) $x = 4$ only

The population of a species of bird grows from 1300 to 1840 in 6 years. Use the exponential growth model $A(t) = Pe^{kt}$ with t measured in years, to determine the value of k. The value of k is:

(a) More than 0.063

(b) Between 0.059 and 0.063

(c) Between 0.055 and 0.059

(d) Between 0.051 and 0.055

(e) Less than 0.051

(c) Between 0.055 and 0.059