Warm Up:

between -1 & 1

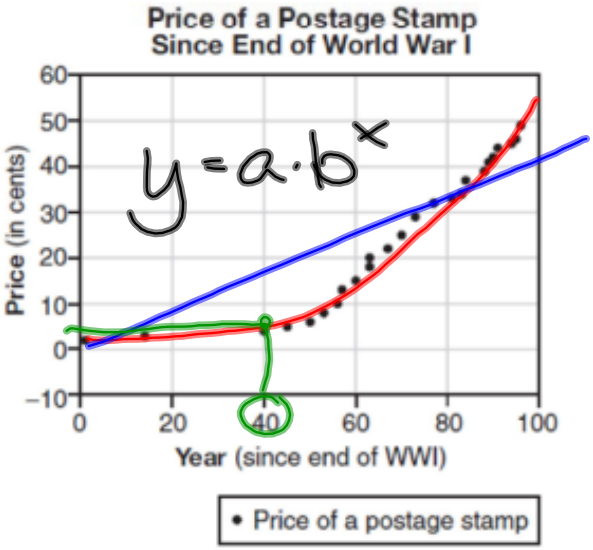
closer to ±1

Which value of r represents data with a strong negative linear correlation between two variables?

(a) ~~-1.07~~ (b) -0.89 (c) -0.14 (d) ~~0.92~~

not neg.

The price of a postage stamp in the years since the end of World War I is shown in the scatterplot below.



The equation that best models the price, in cents, of a postage stamp based on these data is

1) $y = 0.59x - 14.82$ linear
2) $y = 1.04(1.43)^x$ exp
3) $y = 1.43(1.04)^x$ exp
4) $y = 24\sin(14x) + 25$ trig

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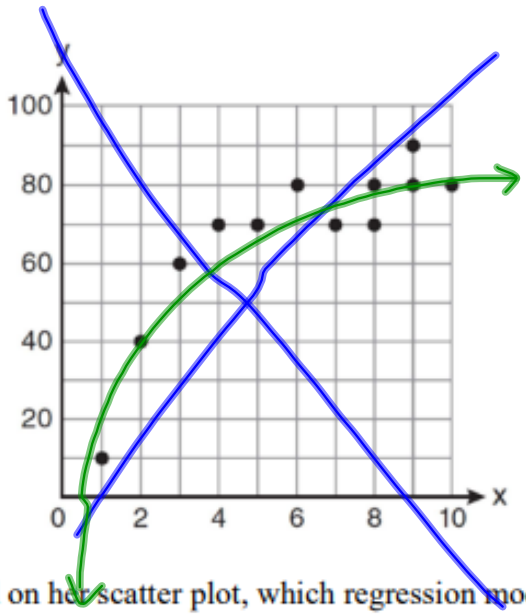
1.04*1.43^40
      1700101.451
1.43*1.04^40
      6.865459498
```

Samantha constructs the scatter plot below from a set of data.



Based on her scatter plot, which regression model would be most appropriate?

1) exponential
2) linear
3) logarithmic
4) power

A pediatrician has the following table that lists the he ... group of 12 baby girls from the same extended family. The ... n centimeters.

LinReg
y=a+blnx
a=35.9381563
b=1.627161495
r²=.9281619959
r=.9634116441

L1 Age (in months) X	2	2	5	4	1	17	1				0	19
L2 Circumference y	36.8	37.2	38.6	38.2	35.9	40.4	39.7	39.9	39.2	41.1	39.3	40.5

Find the logarithmic regression equation for this model. tenth

$y = 35.9 + 1.6 \ln x$

If this pattern continues, what would be the circumference size for a 2 year old? x

$y = 35.9 + 1.6 \ln(24)$ 24 months

41 cm

35.9+1.6ln(24
40.98488613

During which month, would the circumference measure 43.6? x

y=

X	Y1
119	43.547
120	43.56
121	43.573
122	43.586
123	43.599
124	43.612
[redacted]	43.625

X=125

123 months

X	Y1
24	40.985
25	41.05
26	41.113
27	41.173
28	41.232
29	41.288
30	41.342

Press + for ΔTbl

Find a polynomial function of degree 3 in standard form which has the corresponding table values.

x	y
4	18
3	0
2	-4
1	0
0	6
-1	8
-2	0
-3	-24
-4	-70

Zeros: 3, -2, 1

$y = (x-3)(x+2)(x-1)$

$y = (x^2 - x - 6)(x-1)$

$x^3 - x^2 - x^2 + x - 6x + 6$

$y = x^3 - 2x^2 - 5x + 6$

CubicReg
$y = ax^3 + bx^2 + cx + d$
a = 1
b = -2
c = -5
d = 6
$R^2 = 1$
$R = 1$

$y = 1x^3 - 2x^2 - 5x + 6$

Using a microscope, a researcher observed and recorded the number of bacteria spores on a large sample of uniformly sized pieces of meat kept at room temperature. A summary of the data she recorded is shown in the table below.

Hours (x)	**Average Number of Spores** (y)
0	4
0.5	10
1	15
2	60
3	260
4	1130
6	16,380

Regents Practice!!!

Using these data, write an exponential regression equation, rounding all values to the *nearest thousandth*. The researcher knows that people are likely to suffer from food-borne illness if the number of spores exceeds 100. Using the exponential regression equation, determine the maximum amount of time, to the *nearest quarter hour*, that the meat can be kept at room temperature safely.

Now let's throw in some ...

AVERAGE RATE OF CHANGE

Slope $\frac{y_2 - y_1}{x_2 - x_1}$

The table below gives the temperature, in °F, for the first week in September.

September Date	1	2	3	4	5	6	7
Temperature	8	14	4	-1	8	27	28

Determine the average rate of change of the temperature from September 2 to September 5.

$\frac{14-8}{2-5} = \frac{6}{-3}$ $\frac{8-14}{5-2} = \frac{-6}{3}$

-2

The following set of data shows US gas prices in recent years.

Based on the table, what was the average rate of change in the price of gasoline from 2005 to 2014, to the nearest thousandth? Use appropriate units for your answer.

Year	Price ($)
2005	1.78
2006	2.24
2007	2.33
2008	3.11
2009	1.68
2010	2.67
2011	3.07
2012	3.29
2013	3.29
2014	3.33

What is the exponential regression for the data in the table, rounding coefficients to the nearest thousandth. [Use x=1 for the year 2005]

Based upon your regression equation, what is the average rate of change in the price of gasoline from 2005 to 2014, to the nearest thousandth? Use appropriate units for your answer.

Why is there a difference between your answers using the table and using the regression equation?

A runner is using a nine-week training app to prepare for a "fun run." The table below represents the amount of the program completed, A, and the distance covered in a session, D, in miles.

$x = L_1$

$y = L_2$

A	$\frac{4}{9}$	$\frac{5}{9}$	$\frac{6}{9}$	$\frac{8}{9}$	1
D	2	2	2.25	3	3.25

3 dec. places

Based on these data, write an exponential regression equation, rounded to the *nearest thousandth*, to model the distance the runner is able to complete in a session as she continues through the nine-week program.

L1	L2	L3 2
.44444	2	------
.55556	2	
.66667	2.25	
.88889	3	
1	3.25	

L2(6) =

ExpReg
y=a*b^x
a=1.223034549
b=2.652024589
r²=.9597106501
r=.9796482277

$y = 1.223(2.652)^x$