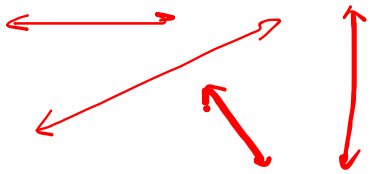
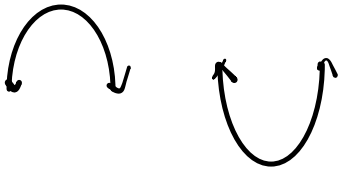
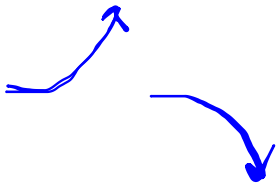
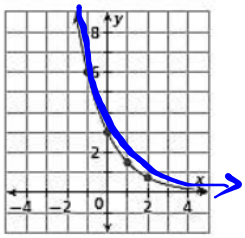
Algebra 1 Unit 11: Comparing Linear, Quadratic, and Exponential Functions Notes

Identifying Types of Functions from a Graph

Quick Sketch		
Linear	Quadratic	Exponential
		

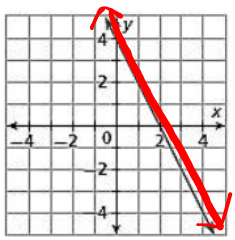
Determine if the following graphs represent an exponential function, linear function, quadratic function, or neither.

a.



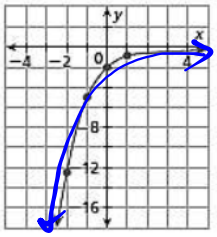
exponent

b.



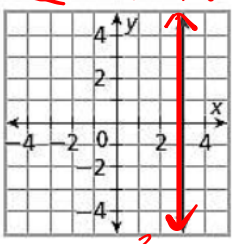
linear

c.



exponent.

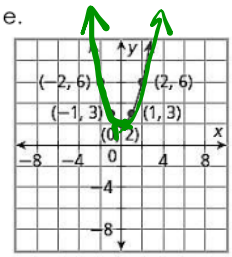
d. VUX



x=3

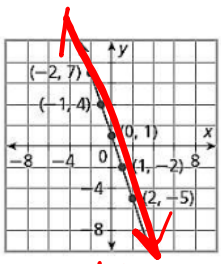
linear

e.



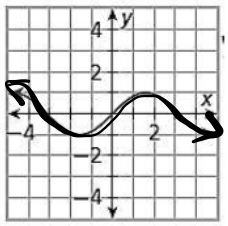
quad

f.



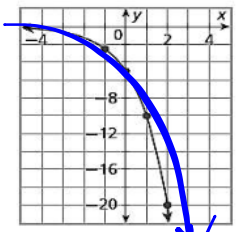
linear

g.



neither

h.



exponent.

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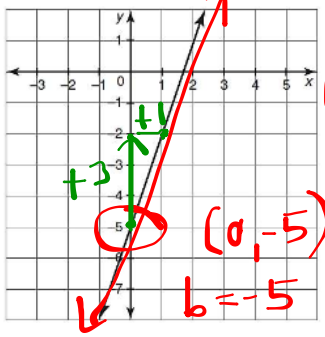
For each graph below, identify if it is linear, quadratic, or exponential. Then write an equation that represents it (by hand, or from using regressions).

a. Type: linear

Equation: $y = 3x + -5$



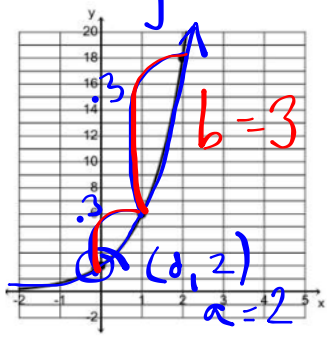
$y = mx + b$ (b = y-int)

$m = \frac{\text{rise}}{\text{run}} = \frac{3}{1} = 3$

$(0, -5)$, $b = -5$

b. Type: expon

Equation: $y = 2 \cdot 3^x$

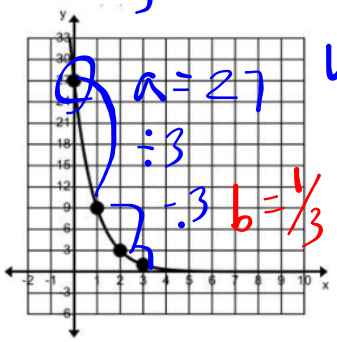


$y = a\,b^x$ (a = y-int, b = ratio)

$(0, 2)$, $a = 2$, $b = 3$

e. Type: expon

Equation: $y = 27\left(\frac{1}{3}\right)^x$

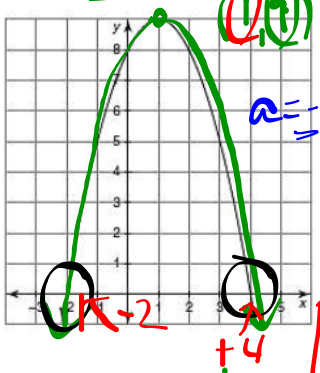


$y = a \cdot b^x$

$a = 27$, $b = \frac{1}{3}$

f. Type: quad

Equation: $y = -(x-1)^2 + 9$



$y = a(x-h)^2 + k$

$(1, 9)$, $a = -1$

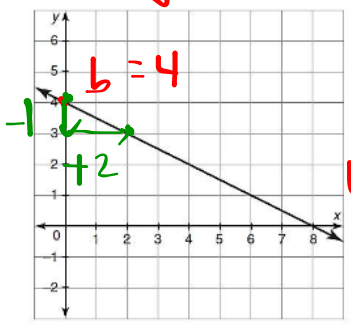
$y = -(x-1)^2 + 9$ VERTEX

$y = (x-\_)(x-\_)$

$y = (x+2)(x-4)$

i. Type: linear

Equation: $y = -\frac{1}{2}x + 4$

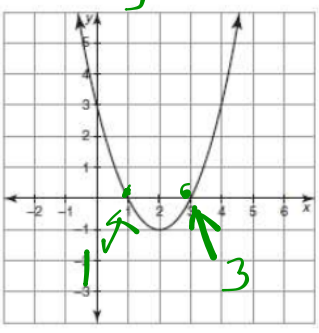


$y = mx + b$

$b = 4$, $m = \frac{-1}{2}$

j. Type: quad

Equation: $y = (x-1)(x-3)$



$y = a(x-\#)(x-\#)$

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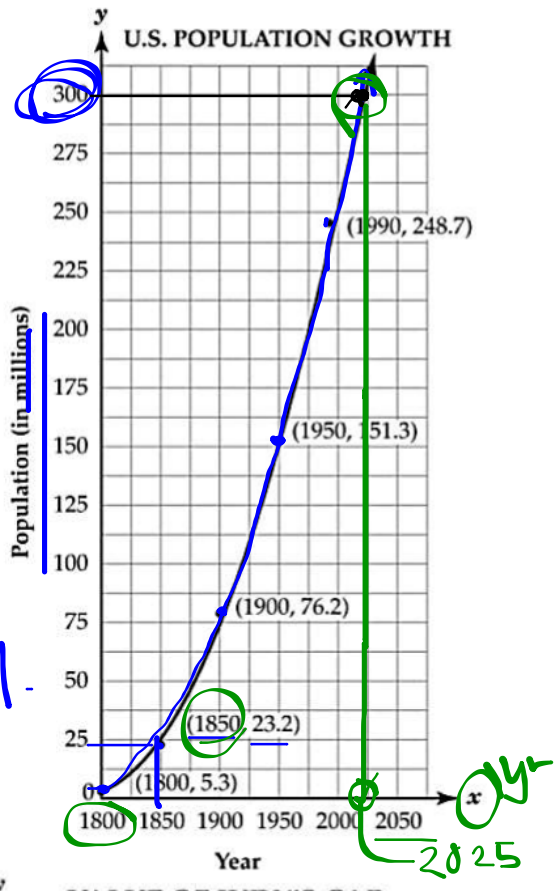
Prediciting with Scatterplots

a. The graph below shows the population growth for the United States since 1800. A curve of best fit has been drawn. According to the curve of best fit, in what year will the population be 300 million?

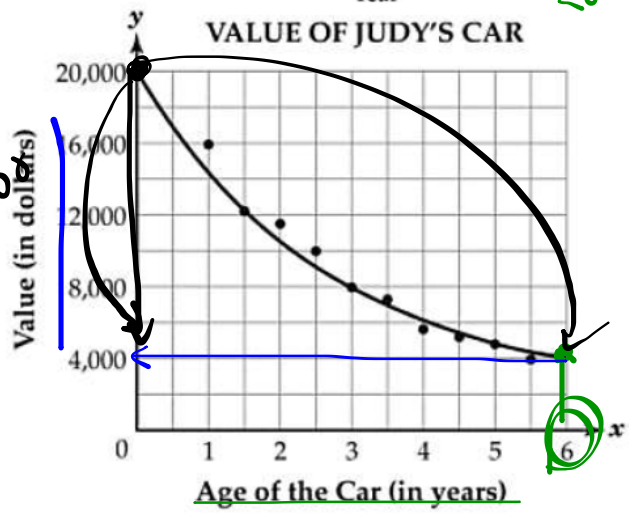


(x, y)
yr ppl

(2025, 300 mil) ✱
yr ppl

In year 2025, the US population will be approx 308 mil.

b. The scatterplot below shows the relationship between the age and value of Judy's car. According to the curve of best fit, how much would Judy's car have decreased in value when the car is 6 years old?



(x, y)
age $

(4, $4000)

-16,000

x	y
0	20,000
6	4,000

-16,000

It decreased $16,000.

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