Functions Warmup

22-05-18

GRADE 12 Applied Functions

Name:_____
Date: _____

WARMUP 18 MAY

For the following quadratic function:

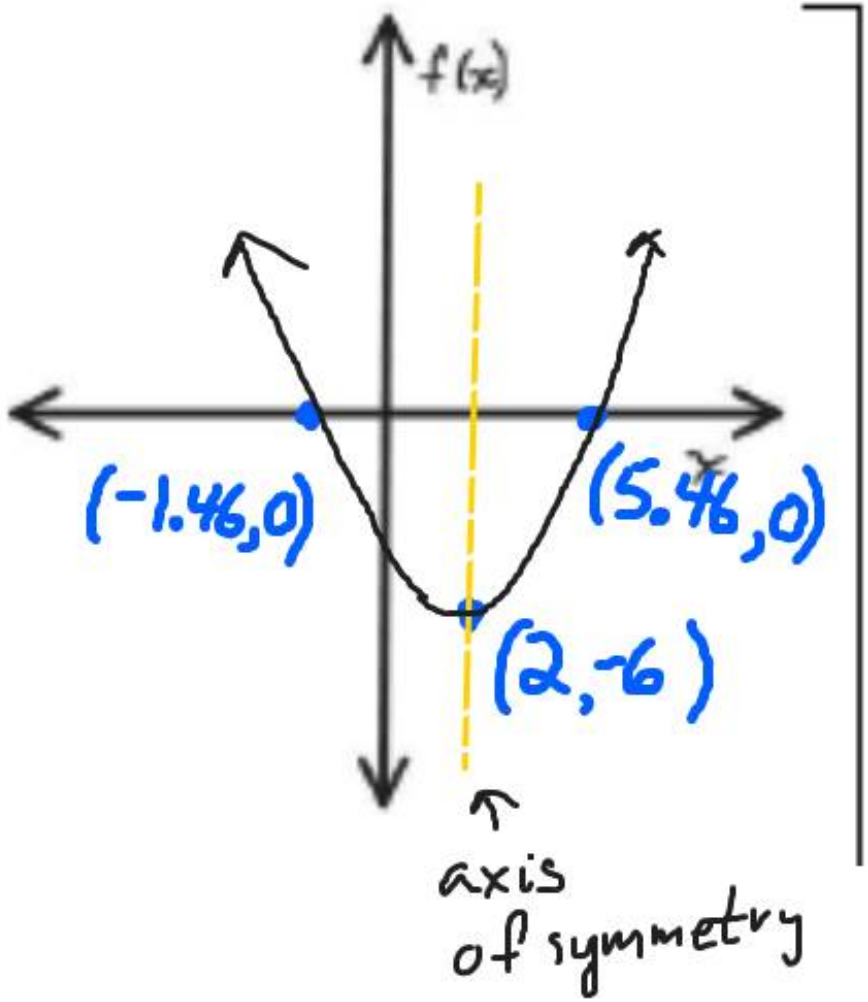
$$f(x) = \frac{1}{2}x^2 - 2x - 4$$

a. Make a representative sketch of the function. Significant points should be in correct quadrants.

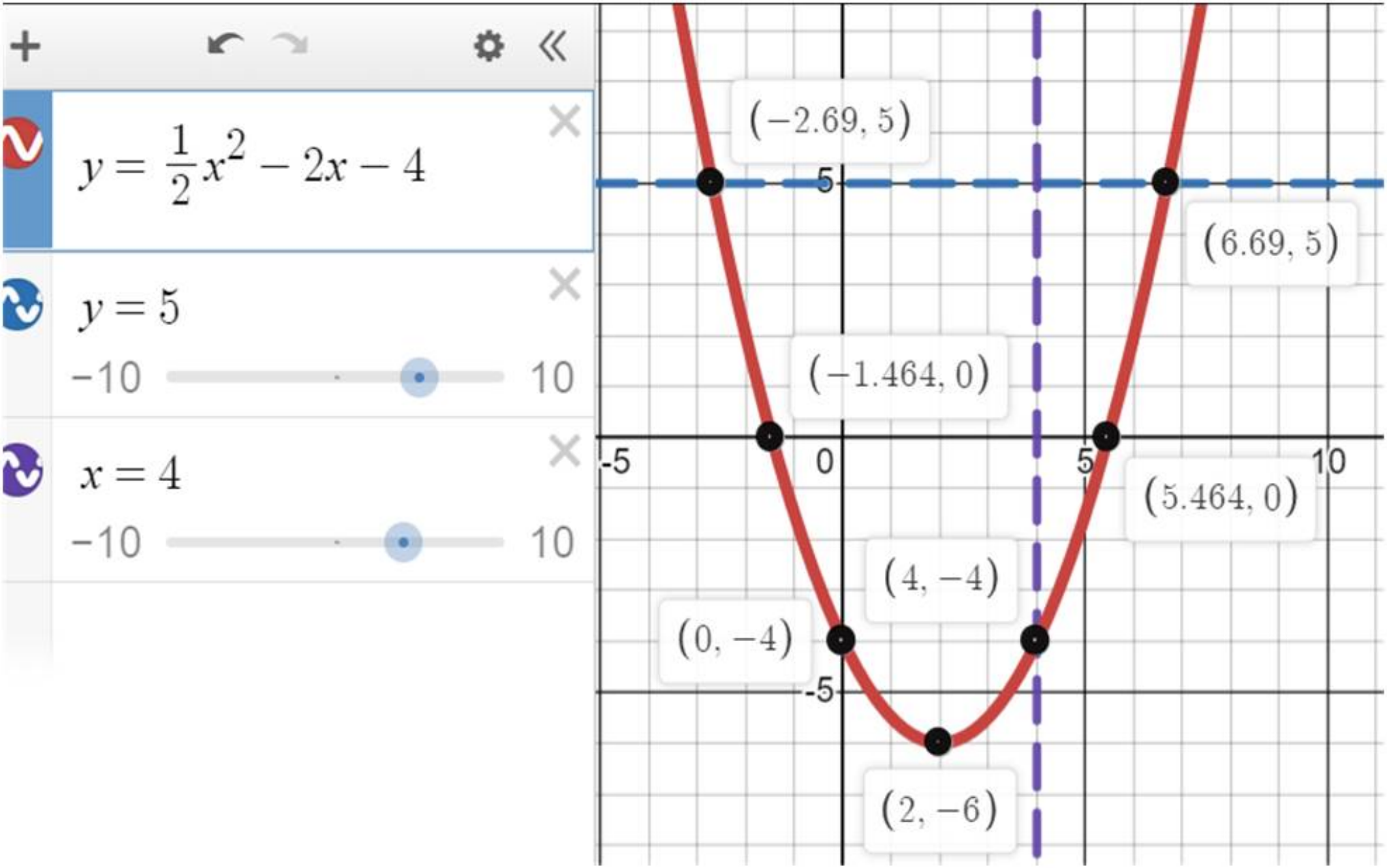
b. State the Domain and the Range

{ $-\infty$ < x < $+\infty$ }

{ -6 $\leq$ f(x) < $+\infty$ }



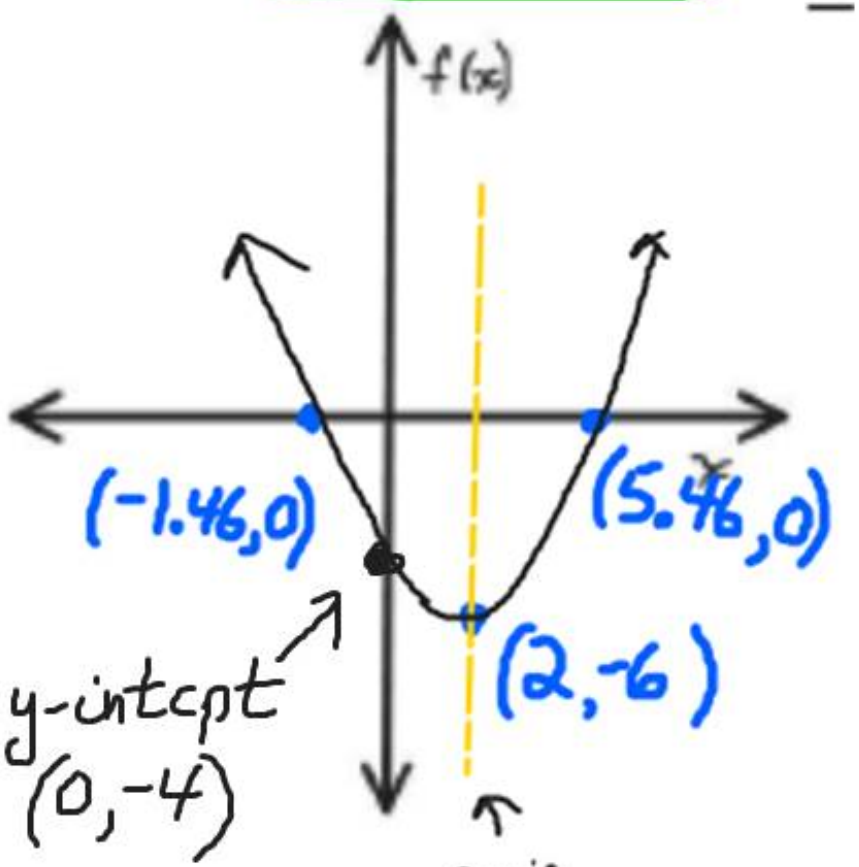
Takes 1 min to figure out the answers!



c. Indicate on the sketch and state the following.

Vertex: (2 , -6)

Axis of Symmetry: x = 2



$f(x) = \frac{1}{2}x^2 - 2x - 4$

d. Indicate on the sketch and state:

y – intercept: (0 , -4)

'zeros' [x- intercept(s)] if any

(-1.46 , 0) ; (5.46 , 0)

e. State the minimum value of the function: _____ -6 is the min value from vertex

f. solve for x:

$5 = \frac{1}{2}x^2 - 2x - 4$ (? ?)

x = { -2.69 , +6.69 }

it works!

1/2*(6.69)^2-2*(6.69)-4 → 4.99805

g. evaluate: f(4) = -4

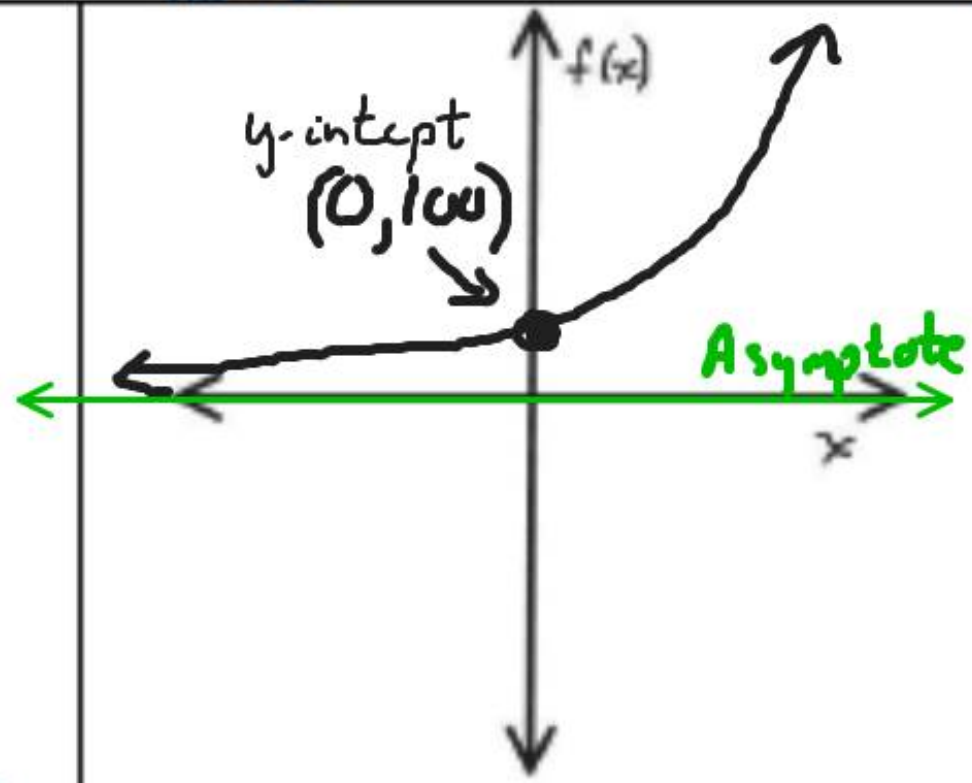
$f(4) = \frac{1}{2}(4)^2 - 2(4) - 4$

$= 8 - 8 - 4 = -4$

For the following exponential function:

$$f(x) = 100 * 2^x$$

a. Make a representative sketch of the function. Significant points should be in correct quadrants.



b. State the Domain and the Range

{ $-\infty$ < x < $+\infty$ }

{ 0 < f(x) < ∞ }

c. Indicate on the sketch and state the following.

Asymptote: y = 0

Approaches 0 at $-\infty$

~~Axis of Symmetry~~: x = ____

d. Indicate on the sketch and state:

y – intercept: (0, 100)

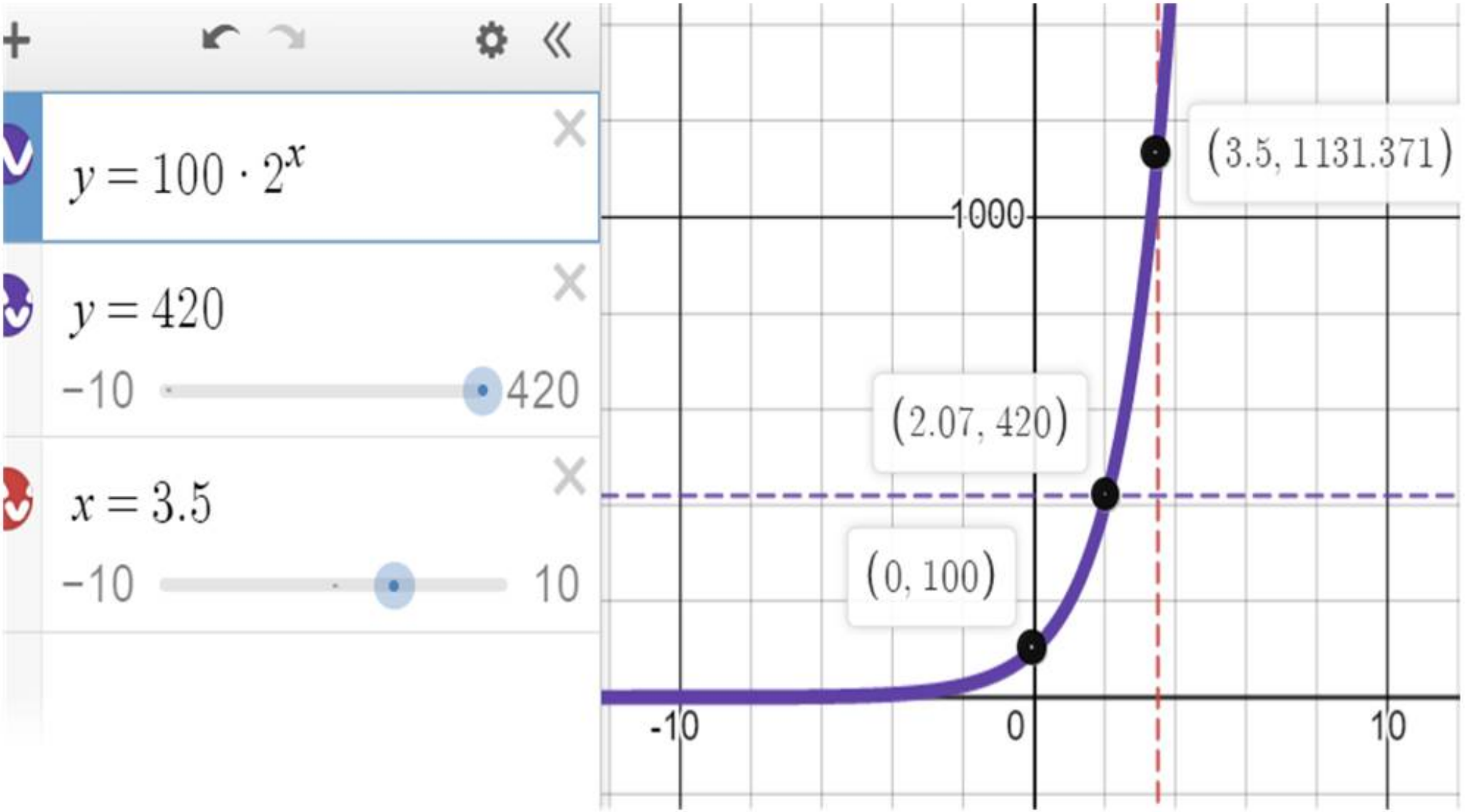
'zeros' [x- intercept(s)] if any

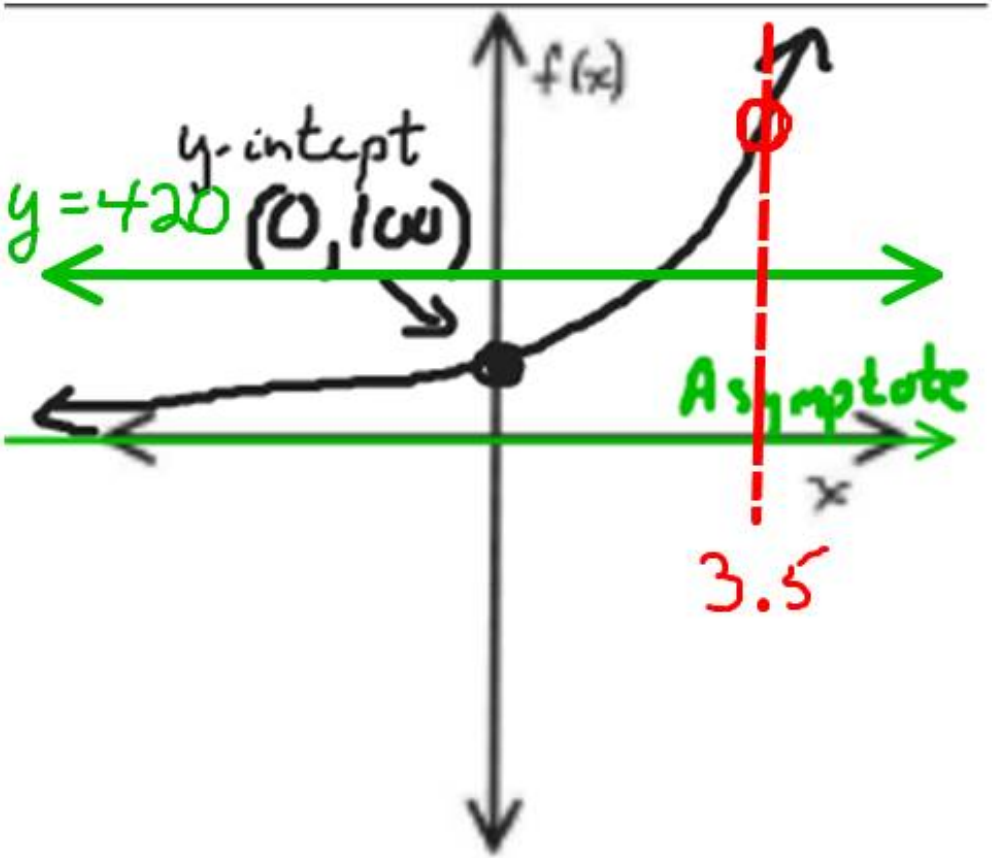
(____, Nil), (____, __)

There are none

Can you do some of this in your head?

Easy Peasy


$y = 100 \cdot 2^x$
$y = 420$
−10
420
$x = 3.5$
−10
10
(3.5, 1131.371)
1000
(2.07, 420)
(0, 100)
-10
0
10



e. state the minimum or maximum value of the function:

The minimum "approaches" zero asymptotically

f. solve for x:

$$420 = 100 * 2^x$$

x = 2.07

100*2^2.07
419.8861
checks

g. Evaluate: f(3.5) = 1131.37

$f(3.5) = 100 \cdot 2^{3.5}$

$= 1131.37$

3 doublings wud be 800
3.5 doublings → 1131
4 doublings wud be 1600

Sounds about right