

/10K	/4A	/3C	/3T	Total	/20
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Name: Answers

Date: _____

MCR3U

Culminating activity test

/6
K

1. Use the approximate values of the x-intercepts of the following parabola (along with one other point) to determine its equation in standard form. Use at least two decimal places for all calculations. Check the accuracy of your equation by comparing its vertex to the vertex shown in the graph.

/3
T

$$\checkmark y = a(x + 2.40)(x - 3.70)$$

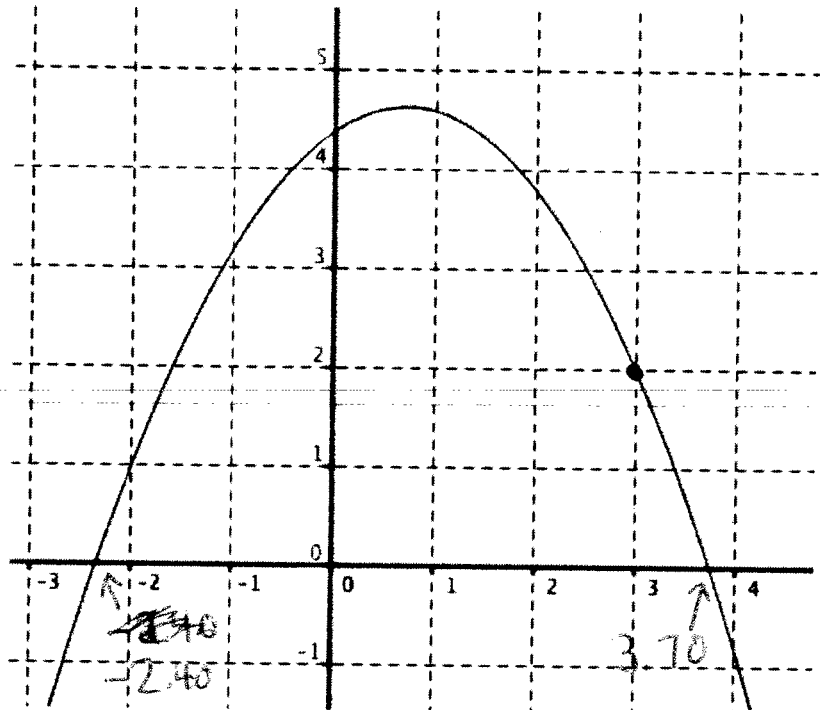
Choose point ie (3, 2)

$$\checkmark 2 = a(3 + 2.40)(3 - 3.70)$$

$$2 = a(5.40)(-0.70)$$

$$\frac{2 = -3.78a}{-3.78 \quad -3.78}$$

$$\checkmark a = -0.53$$



$$\checkmark y = -0.53(x + 2.40)(x - 3.70)$$

Check vertex

According to equation,

$$x = \frac{-b}{2a} = \frac{-0.69}{2(-0.53)} = 0.65$$

$$\text{and so } y = -0.53(0.65)^2 + 0.69(0.65) + 4.71 = 4.93$$

$$\therefore \text{Its at } (0.65, 4.93)$$

Not bad.

ANSWERS WILL VARY

/4
K

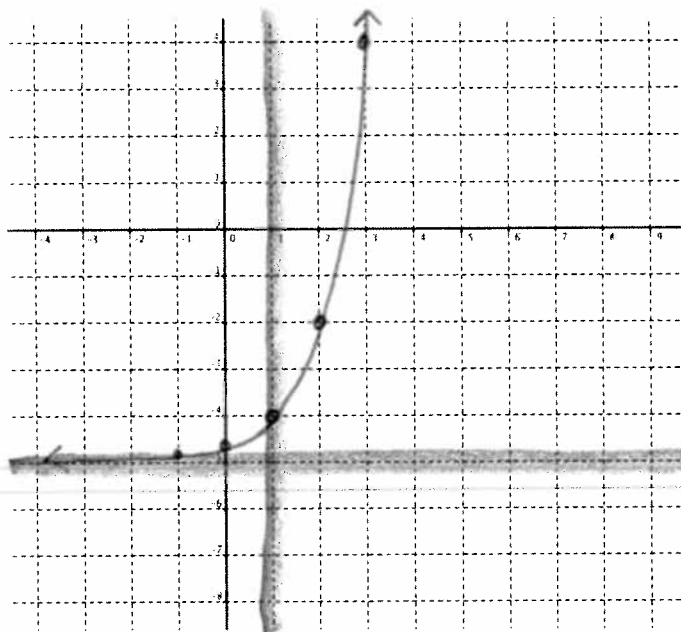
2. Carefully read the following equations representing different kinds of functions:

$$f(x) = 3^{x-1} - 5$$

$$g(x) = 3x^{1/2} - 5$$

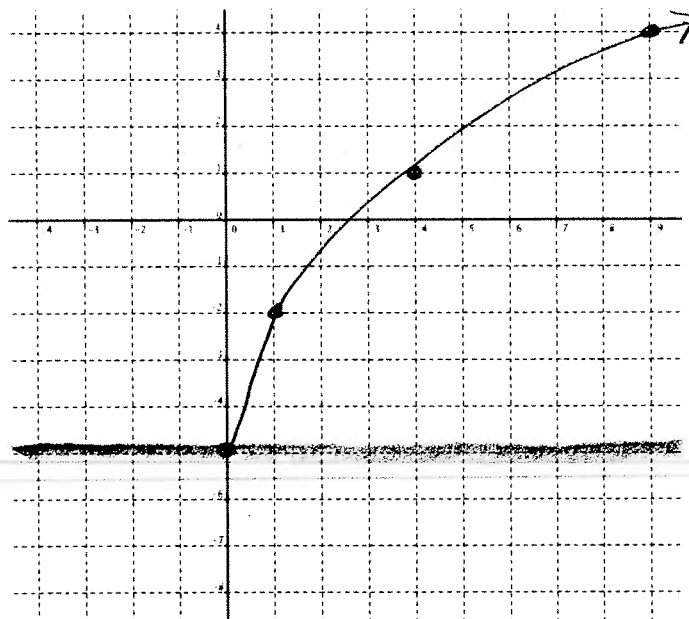
/3
C

- Graph these functions on the grids provided.
- Describe any similarities and differences between the transformations applied to each graph.



Shifted right 1
Shifted down 5

Base function: $y = 3^x$



Stretched $\times 3$ vertically
Shifted down 5

Base function: $y = \sqrt{x}$

/4
A

- John inherited \$340,000 at the age of 42. He decided to invest the money as retirement savings, and was able to earn interest at a rate of 4.8% per year, compounded quarterly. Calculate the value of his retirement savings when he is 55 years old (round to the nearest dollar).

$$A = P(1+i)^n$$

$$= 340000(1+0.012)^{52}$$

$$= \$632,216$$

$$i = \frac{0.048}{4} = 0.012$$

$$n = 13 \times 4 = 52$$

↑
years

↑

↑
of quarters in one year