Math II   Comparing Functions is Different Form

1. Find the y - intercept of the following functions that are represented in a number of different ways. Then be able to list the value of the y - intercept form LEAST to GREATEST in the upper right hand circle of each cell (1 being the least and 9 being the greatest.)

Cell (3):
$$f(x) = -2x - 3$$
$$f(0) = -2(0) - 3$$
$$-3$$

Cell (6):
$$f(x) = 2(x-1)^2 + 5$$
$$f(0) = 2(0-1)^2 + 5$$
$$7 \text{ tie}$$

Cell (4):
(0, -1)
$$-1$$

Cell (7):

x	y
-4	2
-2	5
0	8
2	11

$$8$$

Cell (5):
$$f(x) = 2^x$$
$$f(0) = 2^0$$
$$1$$

Cell (2):
(0, -10)
$$-10$$

Cell (8):
(0, 13)
$$13$$

Cell (6):

x	y
0	7
7	0
14	-7
21	-14

$$7 \text{ tie}$$

Cell (1):
$$f(x) = (x+4)(x-5)$$
$$f(0) = (0+4)(0-5)$$
$$-20$$

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2. The following functions represent the FEARSOME THREE's (a professional hamster diving team) height (in yards) with respect to time (in seconds) of their dive from a platform 10 yards above a reservoir. The water line is at y = 0.
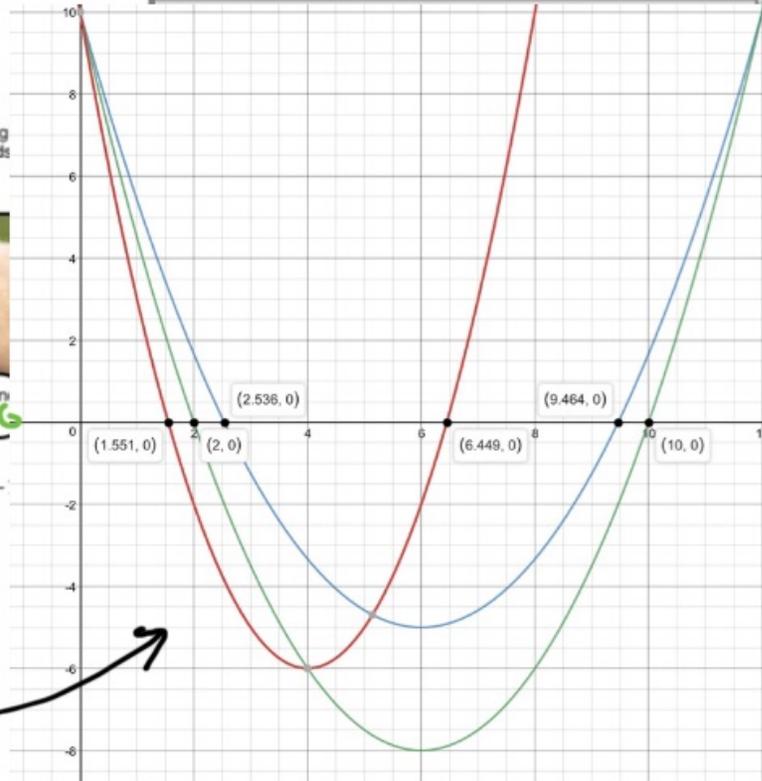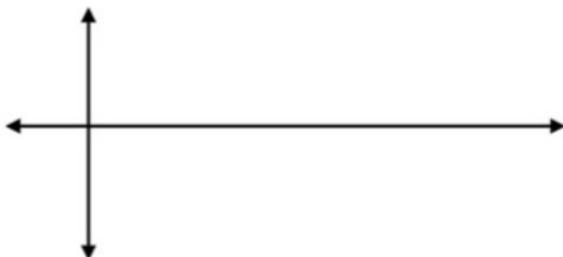

Squiggle   Wiggle   Esmeralda - "The on that cheats death!"

$$f(t)=t^2-8t+10 \qquad h(t)=\frac{5}{12}(t-6)^2-5 \qquad g(t)=0.5(t-2)(t-$$

a. Sketch a graph of each of the functions above in a different color.

b. Based on your graphs, which hamster hit the water first? Explain how you know.

Squiggle hit first after 1.551 seconds

c. Based on your graphs, which hamster dove deeper? Explain how you know.

Esmeralda dove to the deepest depth of 8 feet

d. Based on your graphs, what would be a detail when considering the domain?

Jump time until time emerged from water

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3. Suppose there is a hamster race that is 50 feet long. Given the data below, answer the questions that follow.

Hamster A   Hamster B   Hamster C

secs	feet
0	0
3	20
7	35
10.5	50

$$f(t) = \frac{3}{2}t^2 - 1$$

Where f(t) is feet and "t" is time in seconds.

took 10.5 secs

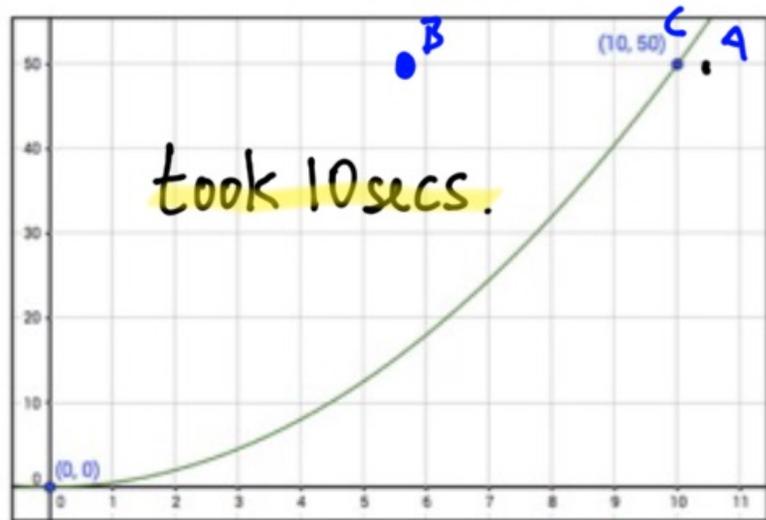*way one – plug in 10 for "t" to see how far H.B. went...*

$f(10) = \frac{3}{2}(10)^2 - 1$

= 149 feet so must have finished first.

way two. See last page

Which hamster came in what place?

Hamster **A**   Hamster **C**   Hamster **B**

took 10secs.

(10, 50)

(0, 0)

SECOND

FIRST

4. Suppose you invested a 1000 dollars, but instead of gaining money, you lost money. Bummer. Anyhow, which of the three options listed below would mitigate your losses the best over 10 years.

- You lose 750 dollars over 10 years.
- You lose 12% of your money every year.
- Your money declines in a quadratic model $f(t) = -7t^2 + 1000$ where f(t) is money and "t" is time and years.

down $750

$250 left

$$y = 1000(1 - 0.12)^x$$
$$y = 1000(.88)^{10}$$

$$f(10) = -7(10)^2 + 1000$$

$300 left

$278.50 left

plug 50 in for the distance and solve for time.

$$50 = \frac{3}{2}t^2 - 1$$

$+1 +1$

$$\frac{51}{1.5} = \frac{\frac{3}{2}t^2}{1.5} \quad (1.5)$$

$$\left(5.831, 50\right)$$

$$\sqrt{34} = \sqrt{t^2}$$

$$5.831 = t$$

$\hookrightarrow$ so it took hamster B 5.831 seconds to finish the race.