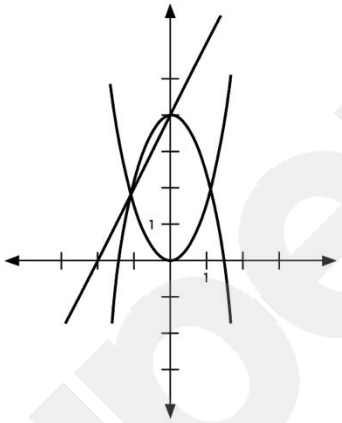
Non-linear Equation Graphs Practice

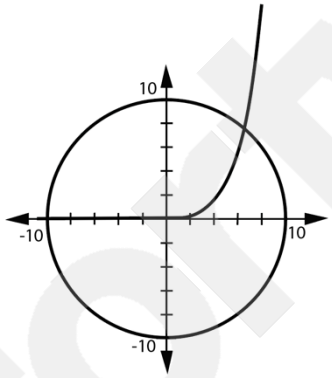
1. The equations $y = \frac{6}{x+1}$ and $y = \frac{6}{x+1} - 3$ are graphed in the xy -plane. Which of the following are true about the graphs of the two equations? *(no calculator)*
   a. Both graphs have a vertical asymptote at $x = 1$
   b. Both graphs have a vertical asymptote at $x = -1$
   c. $y = \frac{6}{x+1}$ has a horizontal asymptote at $y = 0$, and $y = \frac{6}{x+1} - 3$ has a horizontal asymptote at $y = 3$
   d. $y = \frac{6}{x+1}$ has a vertical asymptote at $x = 0$, and $y = \frac{6}{x+1} - 3$ has a vertical asymptote at $x = 3$

2. The system of equations represented by the graph in the xy -plane is:
   I. $y = 2x^2$
   II. $y = -2x^2 + 4$
   III. $y = 2x + 4$



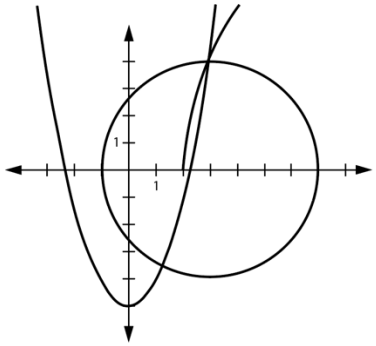
Which of the following lists all solutions to the system of equations? *(no calculator)*
   a. $(-1,2)$
   b. $(0,4)$
   c. $(-2,1)$
   d. $(-1,2)$ and $(0,\ 4)$

3. A system of two equations and their graphs in the xy -plane are shown below. Which of the following ordered pairs is a solution to the system of equations? *(no calculator)*
   I. $x^2 + y^2 = 100$
   II. $y = 2^{x-3}$



   a. $(6,\ 8)$
   b. $(10,\ 0)$
   c. $(-10,\ 0)$
   d. $(8,\ 6)$

4. The system of equations represented by the graph at left is:
   I. $16 = (x-3)^2 + y^2$
   II. $y = x^2 - 5$
   III. $y = 4\sqrt{x-2}$



How many solutions does the system have? *(no calculator)*
   a. 3
   b. 2
   c. 1
   d. 0

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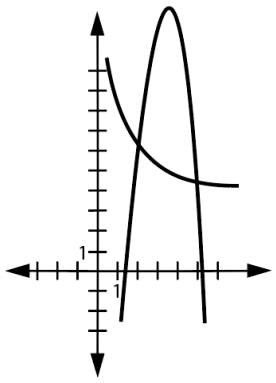
5. The system of equations represented by the graph in the xy -plane below is:

$$y = -4(x-3)^2 + 10$$
$$y = 0.5^{x-3} + 4$$



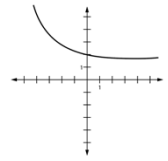
Which of the following ordered pairs is a solution to the system of equations graphed above? *(no calculator)*

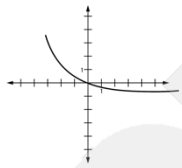
a. $(6,2)$
b. $(4.5,\ 4.5)$
c. $(4,\ 4)$
d. $(2,\ 6)$

6. In the xy -plane, if the parabola with equation $y = ax^2 + bx + c$, where a, b, c, are constants, passes through the point $(-2,1)$, which of the following must be true? *(no calculator)*

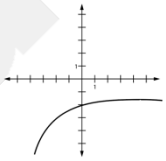
a. $a + b = 1$
b. $4a - 2b + c = 1$
c. $-4a - 2b + c = 1$
d. $4a + 2b + c = 1$

7. A function is defined by the equation $f(x) = 2^{-x} + 1$. Which of the follow is the graph of $y = f(-x)$ in the xy -plane? *(no calculator)*

a.


b.


c.


d.


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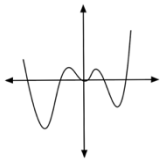
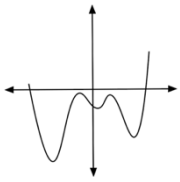
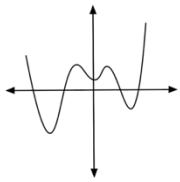
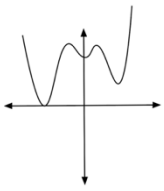
8. If the function f has four distinct zeros, which of the following could represent the complete graph of f in the xy -plane? *(no calculator)*

a. 

b. 

c. 

d. 

9. If $y = 2x^2 + 7x + 4$ is graphed in the xy -plane, which of the following characteristics of the graph is displayed as a constant or coefficient in the equation? *(no calculator)*
   a. y -coordinate of the vertex
   b. x -intercept(s)
   c. y -intercept
   d. x -intercept of the line of symmetry

10. In the xy -plane, the graph of the $y = 2x^2 - 9x$ intersects the graph of $y = x$ at the points (0,0) and (a, a), What is the value of a? *(no calculator)*
    a. 6
    b. 5
    c. 4
    d. 3