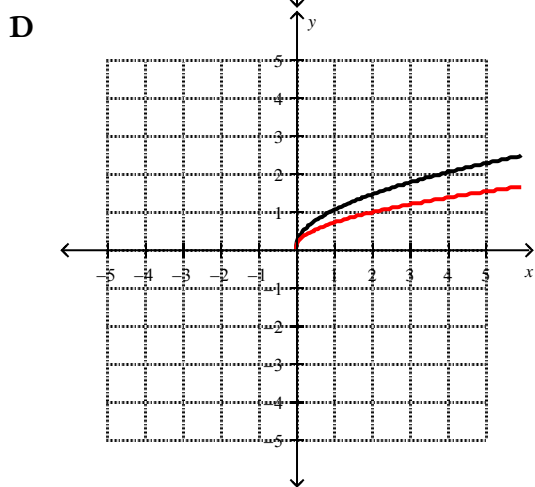
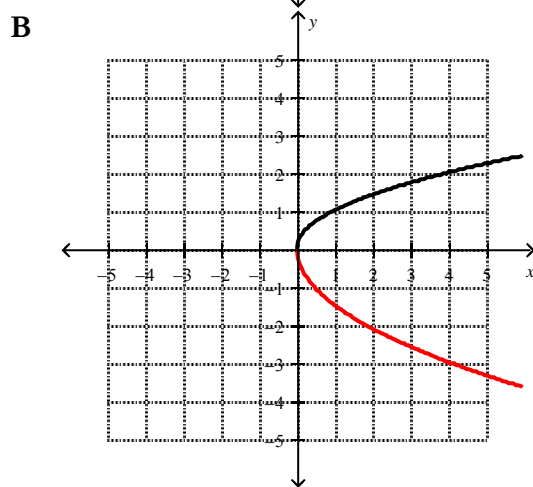
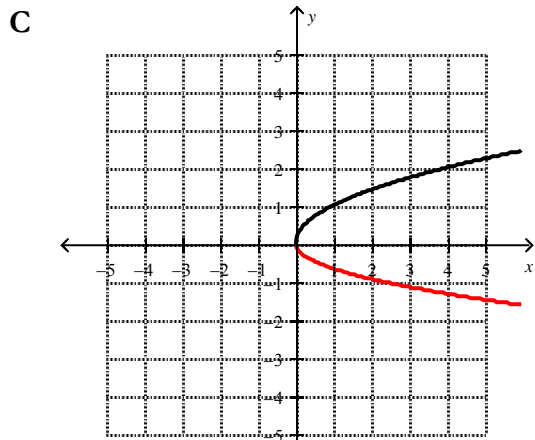
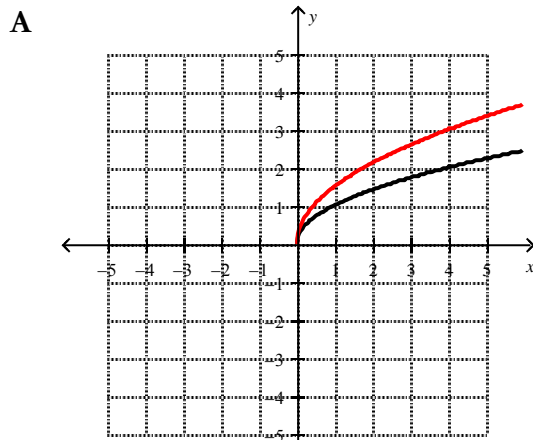


Multiple Choice Identify the choice that best completes the statement or answers the question.

Total 15 Marks

- Compared to the graph of the base function $f(x) = \sqrt{x}$, the graph of the function $g(x) = \sqrt{x} - 2$ is translated
 - 2 units up
 - 2 units to the right
 - 2 units to the left
 - 2 units down
- Compared to the graph of the base function $f(x) = \sqrt{x}$, the graph of the function $g(x) = \sqrt{x-5}$ is translated
 - 5 units down
 - 5 units left
 - 5 units right
 - 5 units up
- Compared to the graph of the base function $f(x) = \sqrt{x}$, the graph of the function $g(x) = \sqrt{5x}$ is
 - compressed by a factor of $\frac{1}{5}$ and not reflected
 - stretched by a factor of 5 and reflected in the y-axis
 - compressed by a factor of $\frac{1}{5}$ and reflected in the y-axis
 - stretched by a factor of 5 and not reflected
- When the graph of $y = \sqrt{x}$ is vertically stretched by a factor of 3, the point $(9, -10)$ will be translated to the point
 - $(-10, 9)$
 - $(3, -30)$
 - $(-30, 9)$
 - $(9, -30)$
- Given the function $f(x) = \sqrt{x-h} + k$ with a domain of $\{x | x \geq -5, x \in \mathbb{R}\}$ and a range of $\{y | y \geq 8, y \in \mathbb{R}\}$, which of the following best describes the vertical and horizontal translations with respect to the graph of $f(x) = \sqrt{x}$?
 - 5 units to the left and 8 units up
 - 8 units to the left and 5 units down
 - 8 units to the left and 5 units up
 - 5 units to the left and 8 units down
- Which point on the graph $y = f(x)$ does not exist on the graph of $y = \sqrt{f(x)}$?
 - $(3, 4)$
 - $(-4, 4)$
 - $(-8, -3)$
 - $(0.6, 2.7)$
- What is the solution to the radical equation $0 = 2\sqrt{2(x+4)} - 8$?
 - 4
 - 12
 - 4
 - 128
- What is the solution to the radical equation $-10 = -10\sqrt{(x+7)}$?
 - 6
 - 8
 - 7
 - 6
- When solving the equation $\sqrt{x+8} = x+6$, which values must be checked for extraneous roots?
 - 4 and 7
 - 7 and -7
 - 8 and 6
 - 4 and -7

10. Which of the graphs shown below represents the base function $f(x) = \sqrt{x}$ (in black) and the stretched function $g(x) = -\frac{3}{2}\sqrt{x}$ (in red)?



11. Which equation of a radical function would have the following domain and range?
 $\{x|x \geq -6, x \in \mathcal{R}\}; \{y|y \geq 10, x \in \mathcal{R}\}$

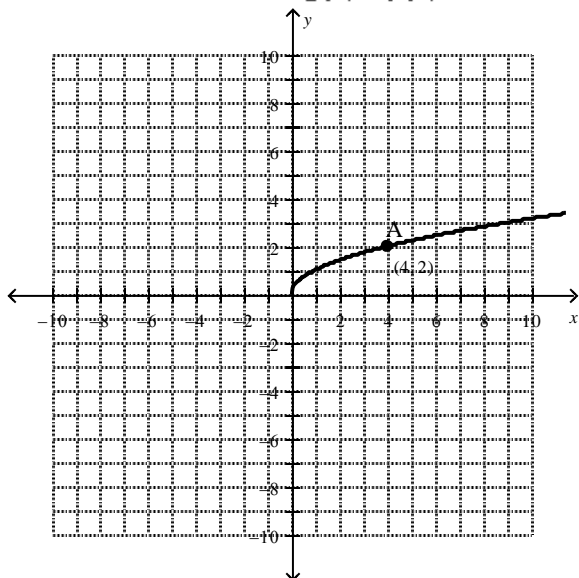
A $y = \sqrt{x-10} + 6$

C $y = \sqrt{x+6} - 10$

B $y = \sqrt{x+6} + 10$

D $y = \sqrt{x+10} + 6$

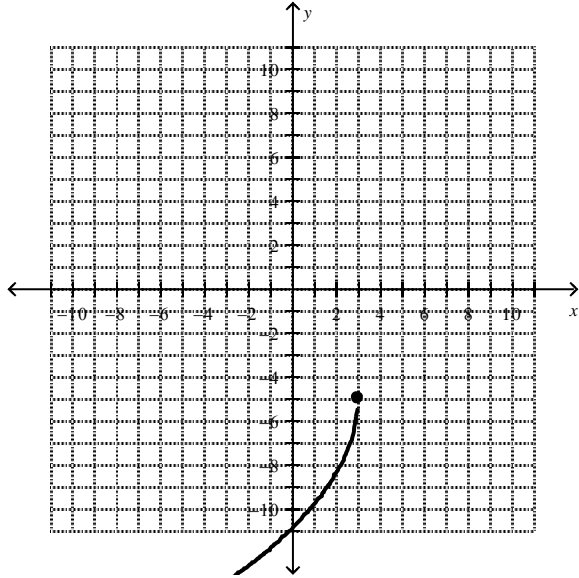
12. Given the graph of $f(x)$ shown below, what are the coordinates of point A if the equation of the transformed function is $g(x) = f(x) + 5$?



- A** $(-1, 7)$
B $(4, 7)$

- C** $(4, -3)$
D $(9, 7)$

13. What is the equation of the radical function shown in the graph below?



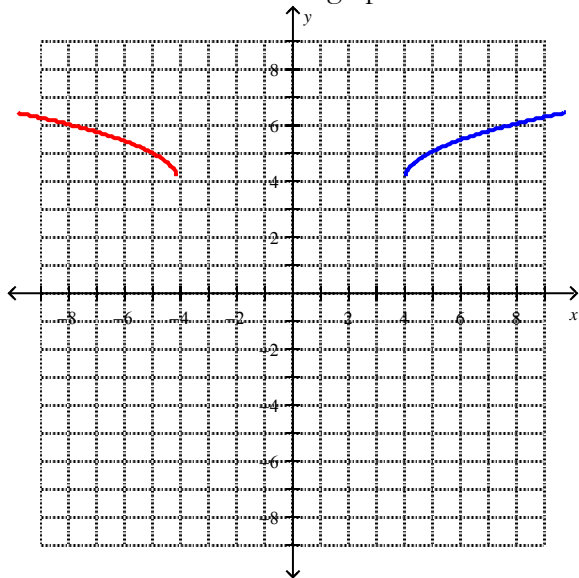
A $f(x) = -2\sqrt{\frac{1}{-3}(x-5)} - 3$

C $f(x) = -2\sqrt{-3(x-3)} - 5$

B $f(x) = -2\sqrt{-3(x+3)} - 5$

D $f(x) = -2\sqrt{\frac{1}{-3}(x-3)} - 5$

14. The two functions in the graph shown are reflections of each other. Select the type of reflection(s).



A a reflection in the y-axis

C a reflection in the line $y = x$

B a reflection in the x-axis and the y-axis

D a reflection in the x-axis

15. If the value of $f(x)$ satisfies $f(x) > 1$, then the graph of $y = \sqrt{f(x)}$ is _____ the graph of $y = f(x)$.

A Above

C Below

B Undefined

D None of the above

Open Response: *All work is to be completed in the space provided*

Total 30 Marks

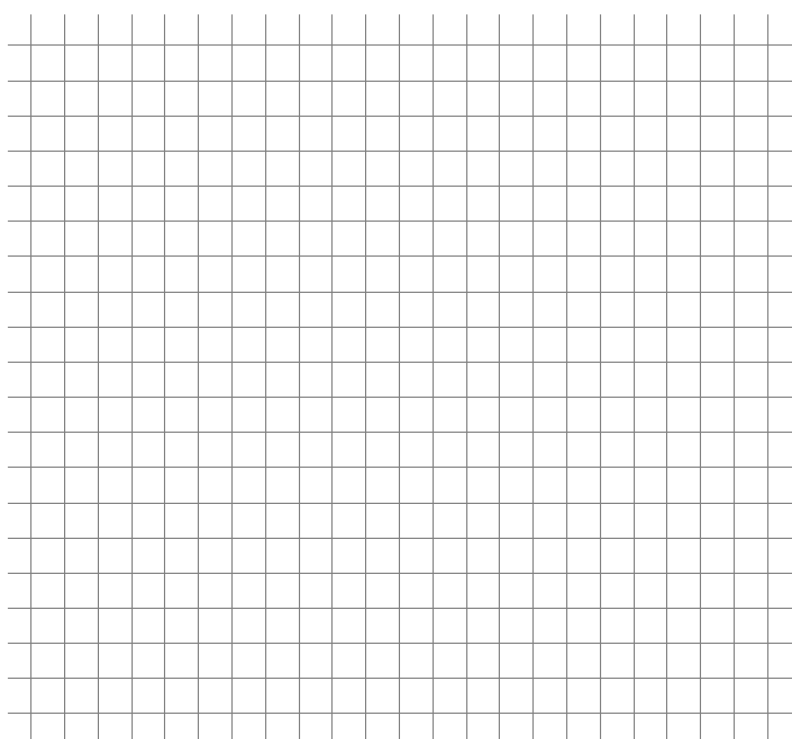
1. Given that $3y - 6 = -9\sqrt{x - 4}$, complete the chart shown below. When identifying translations be sure that you indicate both the number of units and direction of the shift. **[16]**

Reflected in x -axis	YES or NO (circle correct solution)
Reflected in y -axis	YES or NO (circle correct solution)
Horizontal translation of...	
Vertical translation of...	
Horizontally stretched by a factor of...	
Vertically stretched by a factor of ...	
Domain	
Range	

Write a mapping rule and sketch the curve in the space below.

$$y = \sqrt{x}$$

x	y
0	0
1	1
4	2
9	3



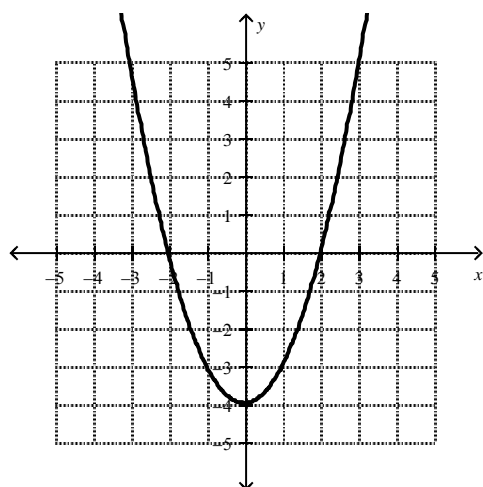
2. A student designs a special container as part of an egg drop experiment. She believes that the container can withstand a fall as long as the speed of the container does not exceed 100 ft/s. She uses the equation $v = \sqrt{(v_0)^2 + 2ad}$ to model the velocity, v , in feet per second, as a function of constant acceleration, a , in feet per second squared and the drop distance, d , in feet. (Note: The acceleration due to gravity is 32 ft/s².)

What is the maximum height the egg can be dropped from?

[3]

3. Using the graph of $y = f(x)$, sketch the graph of $y = \sqrt{f(x)}$ and **state the domain and range of each.**

[6]



4. Solve the following radical equation. $\sqrt{2x+15} - 6 = x$

[5]