Unit 5A Study Guide

1. Describe the transformation of the function:
   \[ f(x) = \frac{3}{15} \sqrt[3]{x - 8} - 1 \]

2. Graph the function \( f(x) = \sqrt{x} + 3 \).

3. Graph \( y = \sqrt{x - 5} \) and state the domain and range.

4. Describe the transformation of the function:
   \[ f(x) = 3\sqrt[3]{x - 8} - 2 \]

5. Describe transformation: \( f(x) = -\frac{1}{5} \sqrt{x + 1} - 1 \)

6. Describe the domain and the range of the function:
   \[ f(x) = 8\sqrt[3]{(x - 4)} - 9 \]

7. Describe the transformation of the function:
   \[ f(x) = \frac{1}{2} \sqrt{x + 2} - 6 \]

8. Describe the domain and the range of the function:
   \[ f(x) = -7\sqrt[3]{x + 2} - 2 \]

9. What is the vertex of the following graph?
   \[ y = -1 \sqrt{x - 4} + 6 \]

10. Graph the function \( f(x) = \sqrt[3]{x - 4} - 1 \).
11. Describe the transformation of the function:
   \[ f(x) = \frac{3}{2} \sqrt{(x + 10)} - 8 \]

12. Which is the graph of \( f(x) = \frac{3}{2} \sqrt{x + 7} + 2 \)?

13. Describe the domain and the range of the function:
   \[ f(x) = -8 \sqrt{(x + 9)} + 2 \]

14. Describe the transformation of the function:
   \[ f(x) = \sqrt{(x + 6)} - 8 \]

15. What is the vertex of the following graph?
   \[ y = 6 \sqrt{x - 5} + 11 \]

16. What is the vertex of the following graph?
   \[ y = -2 \sqrt{x + 5} \]

17. Which is the graph of \( f(x) = \frac{3}{2} \sqrt{x + 1} + 1 \)?

18. Describe the domain and the range of the function:
   \[ f(x) = \sqrt{(x + 5)} - 1 \]

19. Graph \( y = \sqrt{x + 2} \) and state the domain and range.

20. Describe the transformation of the function:
    \[ f(x) = \frac{14}{9} \sqrt{(x + 5)} - 3 \]
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Answer Section

1. Vertical Compression, Translation 8 Units Right, Translation 1 Units Down

2. 2 points for vertex; 3 points for correct graph

3. Domain: \( x \geq 5 \); Range: \( y \geq 0 \)

4. Vertical Stretch, Translation 8 Units Right, Translation 2 Units Down

5. Reflection, Vertical Compress, Translation 1 Units Left, Translation 1 Units Down

6. Domain: \( \{ x \mid -\infty < x < \infty \} \)
   Range: \( \{ y \mid -\infty < y < \infty \} \)

7. Vertical Compression, Translation 2 Units Left, Translation 6 Units Down

8. Domain: \( \{ x \mid -\infty < x < \infty \} \)
   Range: \( \{ y \mid -\infty < y < \infty \} \)

9. \( (4,6) \)

10. 2 points for vertex; 3 points for correct graph

11. Translation 10 Units Left, Translation 8 Units Down
12. 

13. Domain: $x \geq -9$
Range: $y \leq 2$

14. Translation 6 Units Left, Translation 8 Units Down

15. $(5,11)$

16. $(-5,0)$

17. 

18. Domain: $x \geq -5$
Range: $y \geq -1$

19. Domain: $x \geq -2$; Range: $y \geq 0$

20. Vertical Stretch, Translation 5 Units Left, Translation 3 Units Down