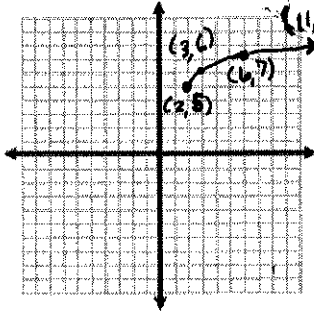


Review for Quiz 1 Radical Functions

Name Key

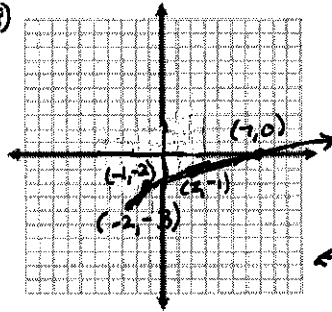
Part 1: Graph the following and state the domain and range.

1. $y = \sqrt{x-2} + 5$



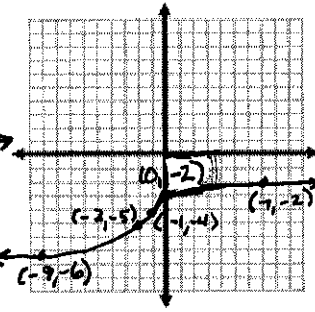
D: $x \geq 2$
R: $y \geq 5$

2. $y = \sqrt{x+2} - 3$



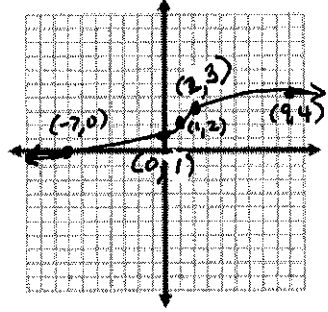
D: $x \geq -2$
R: $y \geq -3$

3. $y = \sqrt[3]{x+1} - 4$



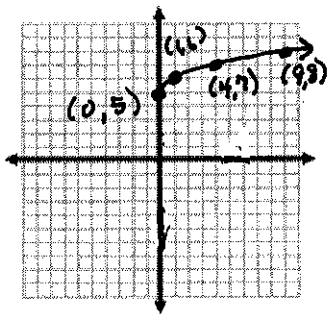
D: \mathbb{R}
R: \mathbb{R}

4. $y = \sqrt[3]{x-1} + 2$



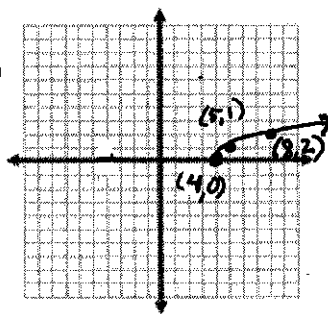
D: \mathbb{R}
R: \mathbb{R}

5. $y = \sqrt{x} + 5$



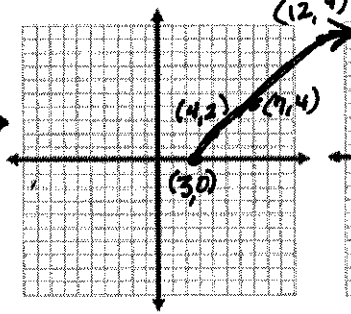
D: $x \geq 0$
R: $y \geq 5$

6. $y = \sqrt{x-4}$



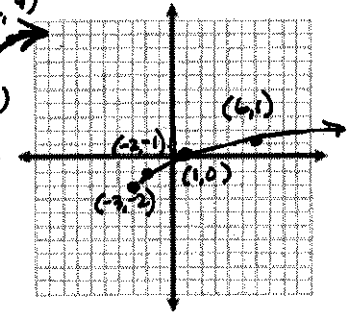
D: $x \geq 4$
R: $y \geq 0$

7. $y = 2\sqrt{x-3}$



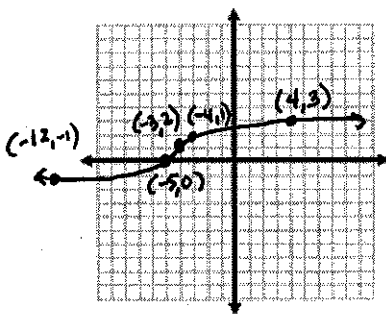
D: $x \geq 3$
R: $y \geq 0$

8. $y = -2 + \sqrt{x+3}$

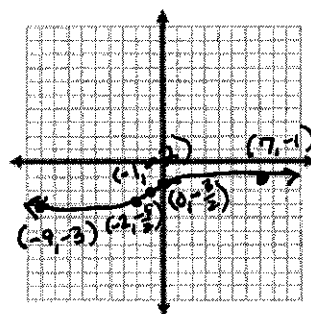


D: $x \geq -3$
R: $y \geq -2$

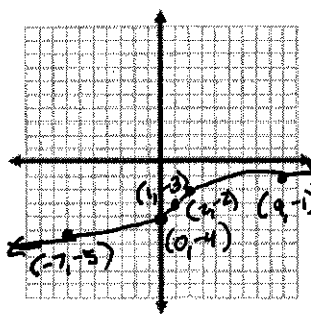
9. $y = \sqrt[3]{x+4} + 1$



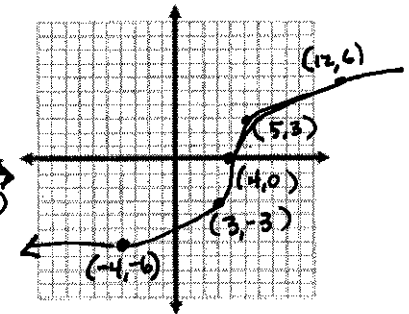
10. $y = \frac{1}{2}\sqrt[3]{x+1} - 2$



11. $y = \sqrt[3]{x-1} - 3$



12. $y = 3\sqrt[3]{x-4}$



Key

Part II: Solving radical equations. Solve the following radical equations. Don't forget to check for extraneous solutions.

13. $5 = \sqrt{x+3}$
 $25 = x+3$

$22 = x$

CK: $\sqrt{22+3} = \sqrt{25} = 5 \checkmark$

14. $10 = \sqrt{\frac{m}{10}}$

$100 = \frac{m}{10}$

$1000 = m$

CK: $\sqrt{\frac{1000}{10}} = \sqrt{100} = 10 \checkmark$

15. $-8 + \sqrt{5a-5} = -3$
 $+8 \quad +8$

$\sqrt{5a-5} = 5$

$5a-5 = 25$

$5a = 30$

$a = 6$

CK: $-8 + \sqrt{30-5} = -8 + \sqrt{25} = -8 + 5 = -3 \checkmark$

16. $10\sqrt{9x} = 60$
 $\sqrt{9x} = 6$

$9x = 36$

$x = 4$

CK: $10\sqrt{36} = 10 \cdot 6 = 60 \checkmark$

17. $\frac{-10\sqrt{v-10}}{-10} = \frac{-60}{-10}$

$\sqrt{v-10} = 6$

$v-10 = 36$

$v = 46$

CK: $-10\sqrt{46-10} = -10\sqrt{36} = -10 \cdot 6 = -60 \checkmark$

18. $10 + \sqrt{10m-1} = 13$

$\sqrt{10m-1} = 3$

$10m-1 = 9$

$10m = 10$

$m = 1$

CK: $10 + \sqrt{10 \cdot 1 - 1} = 10 + \sqrt{9} = 10 + 3 = 13 \checkmark$

Part III: Solving Radical Inequalities. Solve the following inequalities.

19. $\sqrt{y+4} \leq 5$

$0 \leq y+4$ and $y+4 \leq 5^2$
 $-4 \leq y$ $y+4 \leq 25$
 $y \leq 21$

$-4 \leq y \leq 21$

$[-4, 21]$

20. $5 + \sqrt{p+8} \leq 8$

$p+8 \geq 0$ and $\sqrt{p+8} \leq 3$
 $p \geq -8$ and $p+8 \leq 9$
 $p \leq 1$

$[-8, 1]$

21. $-2 + \sqrt{3x-4} \geq 4$

$3x-4 \geq 0$ and $\sqrt{3x-4} \geq 6$
 $3x-4 \geq 36$
 $3x \geq 40$
 $x \geq \frac{40}{3}$

$[\frac{40}{3}, \infty)$

22. $2\sqrt{6+r} > 8$

$\sqrt{6+r} > 4$

$6+r > 16$

$r > 10$

$(10, \infty)$

23. $4 - \sqrt{5x-3} \leq -6$

$-\sqrt{5x-3} \leq -10$

$\sqrt{5x-3} \geq 10$

$5x-3 \geq 100$

$5x \geq 103$

$x \geq \frac{103}{5}$

$[\frac{103}{5}, \infty)$

24. $\frac{-3\sqrt{11p+1}}{2} \leq \frac{-15}{3}$

$\sqrt{11p+1} < 5$

$11p+1 \geq 0$ and $\sqrt{11p+1} < 5$

$11p \geq -1$

$p \geq -\frac{1}{11}$

and

$11p+1 < 25$

$11p < 24$

$p < \frac{24}{11}$

$[-\frac{1}{11}, \frac{24}{11})$