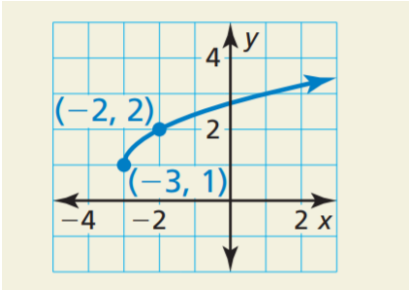
Algebra 2 **Name**_____

WS: Chapter 5, Part I Review **Date**_____**Block**_____

1. Your friend claims it is not possible to simplify the expression $7\sqrt{11}-9\sqrt{44}$ because it does not contain like radicals. Is your friend correct? Explain your reasoning.

2. Does the graph represent a square root function or a cube root function? Explain. What are the domain and range of the function?



3. The length l (in inches) of a standard nail can be modeled by $l = 54d^{3/2}$, where d is the diameter (in inches) of the nail. What is the diameter of a standard nail that is 3 inches long?

4. The speed s (in miles per hour) of a car can be given my $s = \sqrt{30fd}$, where f is the coefficient of friction and d is the stopping distance (in feet). The table shows the coefficient in friction for different surfaces.

Surface	Coefficient of friction, f
Dry asphalt	0.75
Wet asphalt	0.30
Snow	0.30
Ice	0.15

a) Compare the stopping distance of a car traveling 45 miles per hour on the surfaces given in the table.

b) You are driving 35 miles per hour on an icy road when a deer jumps in front of your car. How far away must you begin to brake to avoid hitting the deer? Justify your answer.

5. The Beaufort wind scale was devised to measure wind speed. The Beaufort numbers, B, which range from 0 to 12, can be modeled by $B = 1.69\sqrt{s + 4.25} - 3.55$, where s is the wind speed (in miles per hour).

Beaufort Number	Force of Wind
0	Calm
3	Gentle breeze
6	Strong breeze
9	Strong gale
12	Hurricane

a) What is the wind speed for $B = 0$? $B = 3$?

b) Write an inequality that describes the range of wind speeds represented by the Beaufort model?

In 6 - 9, evaluate the expression without using a calculator. Hint: Rewrite using radical notation first.

6. $8^{1/3}$ 7. $81^{3/4}$ 8. $(-64)^{4/3}$ 9. $16^{-7/4}$

In 10 - 12, find the real solution(s) of the equation. Round your answer to two decimal places when appropriate.

10. $5x^3 = -240$ 11. $(x - 5)^4 = 256$ 12. $x^6 + 40 = 25$

In 13 - 16, use the properties of rational exponents to simplify the expression.

13. $\dfrac{7}{7^{1/3}}$

14. $\left(\dfrac{9^3}{6^3}\right)^{-1/3}$

15. $\left(5^{1/2} \cdot 5^{-3/2}\right)^{-1/4}$

16. $\dfrac{2^{2/3} \cdot 16^{2/3}}{4^{2/3}}$

In 17 - 25, simplify.

17. $\sqrt[3]{16}\cdot\sqrt[3]{32}$

18. $\dfrac{\sqrt[3]{3}\cdot\sqrt[3]{18}}{\sqrt[3]{2}\cdot\sqrt[3]{2}}$

19. $\sqrt[5]{288}$

20. $\sqrt{\dfrac{3}{8}}$

21. $\sqrt[4]{\dfrac{1296}{25}}$

22. $\dfrac{1}{2+\sqrt{5}}$

23. $\dfrac{\sqrt{6}}{\sqrt{5}-\sqrt{3}}$

24. $\sqrt[5]{224}+3\sqrt[5]{7}$

25. $13\left(8^{3/4}\right)-4\left(8^{3/4}\right)$

In 26 - 31, match the function with its graph.

26. $f(x)=\sqrt{x+3}$

27. $h(x)=\sqrt{x}+3$

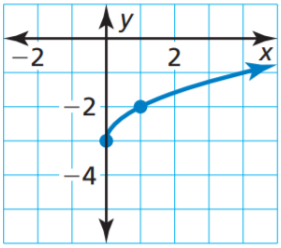
28. $f(x)=\sqrt{x-3}$

29. $g(x)=\sqrt{x}-3$

30. $h(x)=\sqrt{x+3}-3$

31. $f(x)=\sqrt{x-3}+3$

A.



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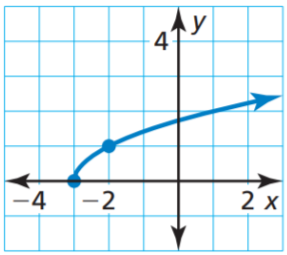

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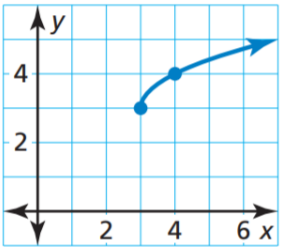

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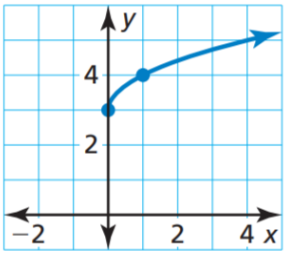

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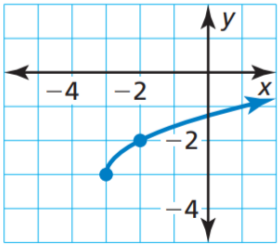

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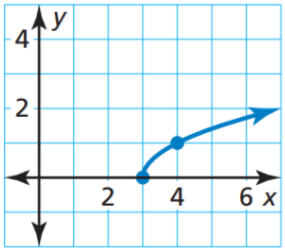
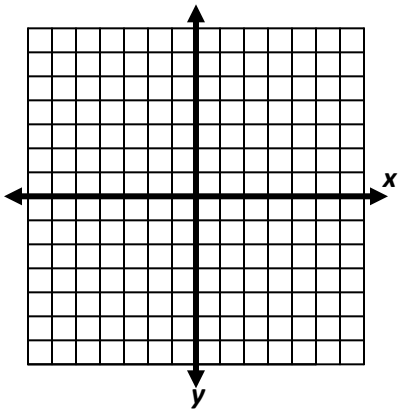
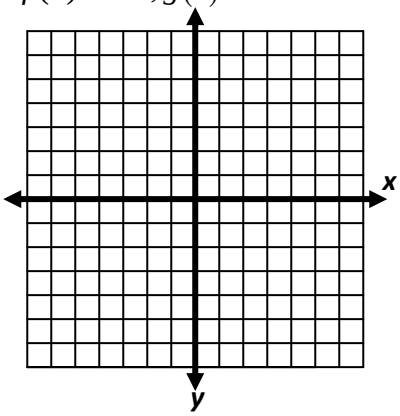


In 32 - 34, describe the transformations of *f* represented by *g*. Then graph each function and identify its domain and range.

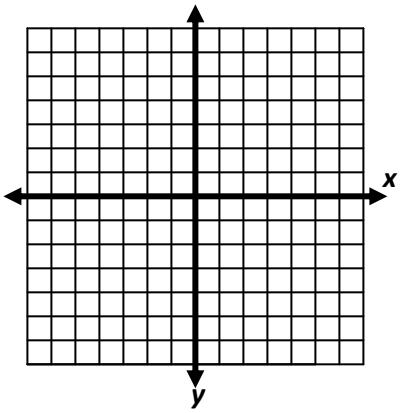
32. $f(x)=\sqrt{x}, g(x)=\sqrt{x+1}+8$



33. $f(x)=\sqrt{x}, g(x)=-2\sqrt{x-1}$



34. $f(x)=\sqrt[3]{x}, g(x)=\sqrt[3]{2x}-1$



In 35 - 36, write a rule for *g* described by the transformations of the graph of *f*.

35. Let *g* be a vertical stretch by a factor of 2, followed by a translation 2 units up of the graph of $f(x)=\sqrt{x}+3$.

36. Let *g* be a translation 1 unit down and 5 units right, followed by a reflection in the *x*-axis of the graph of $f(x)=\sqrt[3]{x}$.

In 37 - 44, solve the equation. Check your solution(s).

37. $\sqrt{5x+1}=6$

39. $x-6=\sqrt{3x}$

41. $(x+6)^{1/2}=x$

43. $\sqrt{44-2x}=x-10$

38. $\sqrt[3]{x}-10=-7$

40. $2x^{2/3}=8$

42. $\frac{1}{5}\sqrt[3]{3x}+10=8$

44. $\sqrt{x+2}=2-\sqrt{x}$

In 45 - 48, solve the inequality.

45. $2\sqrt[3]{x}-5\geq 3$

47. $7\sqrt{x}+1<9$

46. $4\sqrt{x-2}>20$

48. $-2\sqrt[3]{x+4}<12$