Name _____ Class _____ Date _____

Review Exponent Rules

1. $(-2x^{-1}y^{-4})^{-3}$
2. $\dfrac{(5x^{-3})(2x^{-9})}{3x^{5}}$
3. $\left(27x^{-12}\right)^{\frac{2}{3}}$
4. $(4)^{2.5}$

Review 7-1 through 7-3.

Simplify each expression. Assume that all variables are positive.

5. $\left(2-\sqrt{5}\right)\left(2+\sqrt{5}\right)$
6. $\dfrac{\sqrt{48a^5b}}{\sqrt{12ab}}$
7. $\sqrt{5}\left(2\sqrt{45}-\sqrt{5}\right)$
8. $\left(4-2\sqrt{5}\right)^2$
9. $5\sqrt{32}-7\sqrt{8}$
10. $2\sqrt{15xy^3}\cdot 3\sqrt{30x^3y^2}$
11. $\sqrt{18}\cdot\sqrt{6}$
12. $\sqrt[3]{16x^8}\cdot\sqrt[3]{15x^5}$

Simplify each radical expression.

13. $\sqrt{a^4b^6}$
14. $\sqrt[5]{-32s^{15}t^{10}}$
15. $\sqrt[4]{256y^8}$

Rationalize all denominators.

16. $\dfrac{7}{1-\sqrt{3}}$
17. $\dfrac{3-\sqrt{5}}{3+\sqrt{5}}$

State the domain using interval notation.

18. $f(x)=\dfrac{x-7}{x^2-2x-15}$
19. $h(x)=\sqrt{2x-8}$
20. $f(x)=4x^3-7x^2+2x+5$

Review 7-4 through 7-8.

Simplify each expression.

1. $(16x^8)^{-0.75}$
2. $(-64a^9)^{\frac{4}{3}}$

Solve each equation.

3. $(4x-3)^{\frac{3}{2}}=8$
4. $\sqrt{6x-1}-2=0$

Solve each equation. Check for extraneous solutions.

5. $\sqrt{7x+2}-2=7x$
6. $(-2-x)^{0.5}-x=2$

Let $f(x) = 3x^2 - 2x$ and $g(x) = x - 6$. Find each value.

7. $(f-g)(2)$ 8. $\left(\frac{f}{g}\right)(-1)$ 9. $(g \circ f)(3)$ 10. $(f \circ g)(0)$

Find the inverse of each function algebraically. Is the inverse a function?

11. $y = x^2 + 2$ 12. $y = (x+3)^2$ 13. $y = 2x - 1$

For each function f, find f^{-1} algebraically, find the domain and range of f and f^{-1}. Write the domain and range in interval notation. Determine whether f^{-1} is a function.

14. $f(x) = -\frac{1}{5}x + 2$ 15. $f(x) = x^2 - 2$ 16. $f(x) = \sqrt{x-1}$

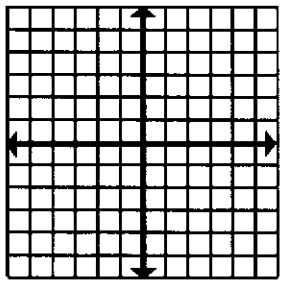
Let $f(x) = -2x^2 - 1$ and $g(x) = 3x - 4$. Find each combination.

17. $(g-f)(x)$ 18. $(f \circ g)(x)$ 19. $(g \circ g)(x)$ 20. $\left(\frac{f}{g}\right)(x)$, what is the domain of $\left(\frac{f}{g}\right)(x)$

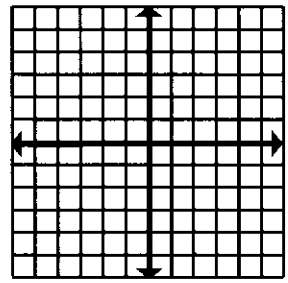
Let $f(x) = 2x + 5$. Find each value. 21. $(f^{-1} \circ f)(-1)$ 22. $f(f^{-1}\left(-\frac{1}{2}\right))$

Graph each function.

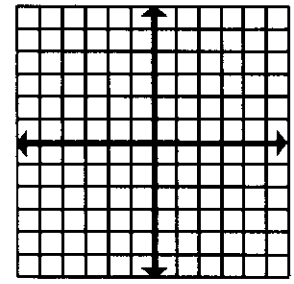
23. $y = -\sqrt{x+2}$



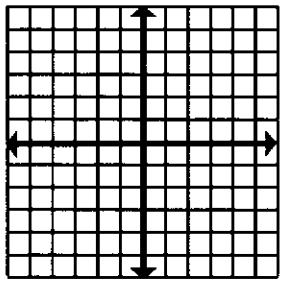
24. $y = -\sqrt{x} - 1$



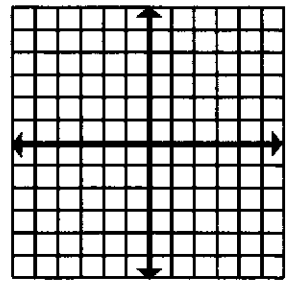
25. $y = -\sqrt{x-2} + 3$



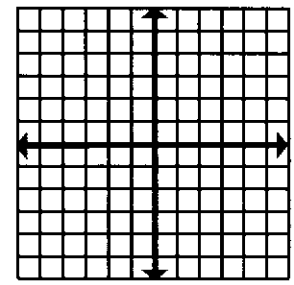
26. $y = \sqrt[3]{x-1}$



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



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



State the domain using interval notation.

29. $f(x) = \sqrt{2x+10}$ 30. $f(x) = \frac{5x^2 - 11}{10x^2 - 19x + 6}$ 31. $f(x) = x^2 - 10x + 25$