



Name _____

Period _____

Date _____

READY

Topic: Properties of exponents

Use the product rule or the quotient rule to simplify. Leave all answers in exponential form with only positive exponents.

1. $3^6 \cdot 3^5 = 3^{11}$

2. $7^2 \cdot 7^6 = 7^8$

3. $10^{-4} \cdot 10^7 = 10^3$

4. $5^9 \cdot 5^{-6} = 5^3$

5. $p^2 p^5 = p^7$

6. $2^6 \cdot 2^{-3} \cdot 2 = 2^4$

7. $b^{11} b^{-5} = b^6$

8. $\frac{7^5}{7^2} = 7^3$

9. $\frac{9^8}{9} = 9^7$

10. $\frac{3^5}{3^8} = \frac{1}{3^3}$

11. $\frac{7^{-4}}{7^{-8}} = \frac{7^8}{7^4} = 7^4$

12. $\frac{p^{-3}}{p^5} = \frac{1}{p^8}$

SET

Topic: Inverse function

13. Given the functions $f(x) = \sqrt{x} - 1$ and $g(x) = x^2 + 7$:

a. Calculate $f(16)$ and $g(3)$. $f(16) = \sqrt{16} - 1 = 3$ $g(3) = 3^2 + 7 = 16$

b. Write $f(16)$ as an ordered pair. $(16, 3)$

c. Write $g(3)$ as an ordered pair. $(3, 16)$

d. What do your ordered pairs for $f(16)$ and $g(3)$ imply? $f(x)$ & $g(x)$ might be inverse functions

e. Find $f(25)$. $f(25) = \sqrt{25} - 1 = 4$

f. Based on your answer for $f(25)$, predict $g(4)$. $g(4) = 25$

g. Find $g(4)$. $g(4) = 4^2 + 7 = 23$

Did your answer match your prediction? No

h. Are $f(x)$ and $g(x)$ inverse functions? No

Justify your answer.
 $f^{-1}(x) = (x+1)^2$
 and $g^{-1}(x) = \sqrt{x-7}$

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Match the function in the first column with its inverse in the second column.

$f(x)$	$f^{-1}(x)$
16. $f(x) = 3x + 5$ $\downarrow \cdot 3 \uparrow \div 3$	a. $f^{-1}(x) = \log_5 x$
17. $f(x) = x^5$	b. $f^{-1}(x) = \sqrt[3]{x}$
18. $f(x) = \sqrt[5]{x-3}$ $\downarrow \cdot 3 \uparrow \div 3$	c. $f^{-1}(x) = \frac{x-5}{3}$
19. $f(x) = x^3$	d. $f^{-1}(x) = \frac{x}{3} - 5$
20. $f(x) = 5^x$	e. $f^{-1}(x) = \log_3 x$
21. $f(x) = 3(x+5)$ $\downarrow \cdot 3 \uparrow \div 3$	f. $f^{-1}(x) = x^5 + 3$
22. $f(x) = 3^x$	g. $f^{-1}(x) = \sqrt[5]{x}$

GO

Topic: Solving Quadratic Equations

Solve the following quadratic equations.

23. $2a^2 - a - 13 = 2$

$$2a^2 - a - 15 = 0$$

$$2a^2 - 6a + 5a - 15 = 0$$

$$2a(a-3) + 5(a-3) = 0$$

$$(2a+5)(a-3) = 0$$

$$a = -\frac{5}{2} \quad a = 3$$

26. $8x^2 - 4x = 18$

$$8x^2 - 4x - 18 = 0$$

$$2(4x^2 - 2x - 9) = 0$$

$$x = \frac{2 \pm \sqrt{4 + 144}}{8} = \frac{2 \pm \sqrt{148}}{8}$$

$$x = \frac{2 \pm 2\sqrt{37}}{8} = \frac{1 \pm \sqrt{37}}{4}$$

* 24. $8x^2 + 6x - 5 = 0$

$$8x^2 + 6x - 5 = 0$$

$$x = \frac{-6 \pm \sqrt{36 - 160}}{16}$$

$$x = \frac{-6 \pm \sqrt{-124}}{16} = \frac{-6 \pm i\sqrt{124}}{16}$$

$$x = \frac{-6 \pm 2i\sqrt{31}}{16} = \frac{-3 \pm i\sqrt{31}}{8}$$

* 27. $3x^2 = 6x - 3$

$$3x^2 - 6x + 3 = 0$$

$$3(x^2 - 2x + 1) = 0$$

$$3(x-1)(x-1) = 0$$

$$x = 1$$

25. $x^2 = -3x + 40$

$$x^2 + 3x - 40 = 0$$

$$(x+8)(x-5) = 0$$

$$x = -8 \quad x = 5$$

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