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Unit 7 - Exponents and Exponential Functions Test

Simplify the following expressions.

1. $ab^2 \cdot a^3b^2$

2. $(xy^2)^3$

3. $a(ab^3c)^0$

4. $(2x)^2(x^2)$

5. $\frac{4x^3y^2}{2xy} =$

6. $\left(\frac{2a^3}{b}\right)^2$

7. $(3g)(2g^{-2})$

8. $\left(\frac{3x}{y}\right)^2(4y)$

9. $(3x)(4x)^0(5x)^{-1}$

10. $\left(\frac{6ab}{y}\right)\left(\frac{4y}{3a}\right)$

11. $2(3x)^{\frac{1}{2}}$

12. $\sqrt{48x^2y}$

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Unit 7 - Exponents and Exponential Functions Test

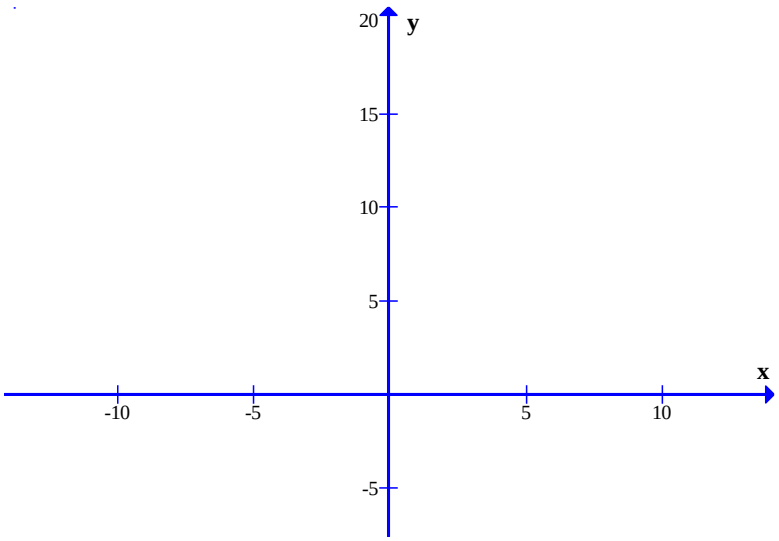
13. $\sqrt{\frac{3}{16x^4}}$

14. $\sqrt[8]{16}$

15. Find f(x) given the value of x for the function $y = \left(\frac{1}{4}\right)^{2x}$.

X	-1	0	1
y			

16. Draw the graph of $y = \left(\frac{1}{4}\right)^{2x}$.



17. A garden pool contains 450 gallons of water. The water in the pool is reducing by 20% every hour using a pipe to drain the water. How much water will be left after 3 hours?

Unit 7 - Exponents and Exponential Functions Test

18. $5000 is invested in a bank at 8% for 5 years compounded semi-annually. What will be the final amount of the money after 5 years?

19. Find the 7th term of a geometric sequence given the first element is 7 and the common ratio is 3.

20. Find the sum of the first 5 terms of a geometric sequence given the first element is 3 and the common ratio of 4.

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Unit 7 - Exponents and Exponential Functions Test

ANSWER

Simplify the following expressions.

1. $ab^2 \cdot a^3b^2 = a^4b^4$

2. $(xy^2)^3 = x^3y^6$

3. $a(ab^3c)^0 = a$

4. $(2x)^2(x^2) = 4x^4$

5. $\frac{4x^3y^2}{2xy} = 2x^2y$

6. $\left(\frac{2a^3}{b}\right)^2 = \frac{8a^6}{b^3}$

7. $(3g)(2g^{-2}) = \frac{6}{g}$

8. $\left(\frac{3x}{y}\right)^2 (4y) = \frac{36x^2}{y}$

9. $(3x)(4x)^0(5x)^{-1} = \frac{3}{5}$

10. $\left(\frac{6ab}{y}\right)\left(\frac{4y}{3a}\right) = 8b$

11. $2(3x)^{\frac{1}{2}} = 2\sqrt{3x}$

12. $\sqrt{48x^2y} = \sqrt{16 \cdot 3}\sqrt{x^2}\sqrt{y} = 4x\sqrt{3y}$

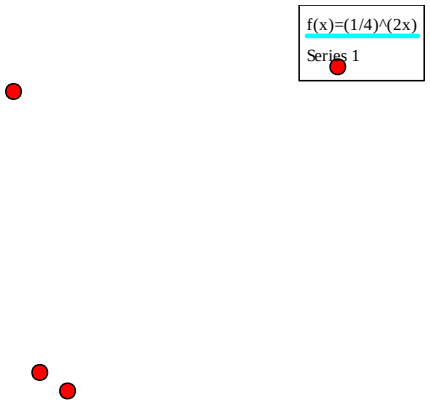
13. $\sqrt{\frac{3}{16x^4}} = \frac{\sqrt{3}}{4x^2}$

14. $\sqrt[8]{16} = \sqrt{\sqrt[4]{16}} = \sqrt{2}$

15. Find f(x) given the value of x for the function $y = \left(\frac{1}{4}\right)^{2x}$.

X	-1	0	1
y	16	1	1/16

16. Draw the graph of $y = \left(\frac{1}{4}\right)^{2x}$.



Unit 7 - Exponents and Exponential Functions Test

17. A garden pool contains 450 gallons of water. The water in the pool is reducing by 20% every hour using a pipe to drain the water. How much water will be left after 3 hours?

Solution:

$N_t = N_0(0.2)^t$

$N_o = 450$

t = 3

$N_3 = 450(0.2)^3 = 3.6\ gallons$

18. $5000 is invested in a bank at 8% for 5 years compounded semi-annually. What will be the final amount of the money after 5 years?

Solution:

$N_t = N_0(1 + r)^t$

$N_o = 5000$

t = 5(2) =10

r = 0.08/2 =0.04

$N_5 = 5000(1 + 0.04)^{10} = \$7401.2$

19. Find the 7th term of a geometric sequence given the first element is 7 and the common ratio is 3.

Solution:

$a_n = ar^{n-1}$

$a_7 = 7(3)^{7-1} = 5103$

20. Find the sum of the first 5 terms of a geometric sequence given the first element is 3 and the common ratio of 4.

Solution:

$S = \frac{a(1 - r^n)}{1 - r}$

$S = \frac{3(1 - (4)^5)}{1 - 4} = 1023$