

**Unit 7 - Exponents and Exponential Functions** Review Guide

Simplify the following expressions.

$$x^0 = 1$$

1.  $3x^0$

$$x^{-m} = \frac{1}{x^m}$$

2.  $3x^{-1}$

3.  $2x + (5y)^0$

4.  $(4xy)^{-1}$

5.  $2(3zy^2x^0)$

6.  $2ab^{-1}c$

$$x^m \cdot x^n = x^{m+n}$$

7.  $a^2 \cdot a^3$

$$(x^m)^n$$

8.  $(a^2)^3$

9.  $2x^2y \cdot 3x$

10.  $(3^2)^{-1}$

11.  $4a^3 \cdot 2a^{-1}$

12.  $(x^2)^3 \cdot x^4$

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$$(ab)^m = a^m b^n$$

13.  $(3a^2)^3$

$$\frac{x^m}{x^n} = x^{m-n}, 1, \frac{1}{x^{n-m}}$$

14.  $\frac{a^5}{a^3}$

15.  $(2st^3)^5$

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

17.  $(3ab^2)^2 \cdot (ab)$

18.  $\frac{20xy}{5x^2y}$

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

19.  $\left(\frac{2x}{y}\right)^2$

$$x^{1/2} = \sqrt{x}$$

20.  $8^{\frac{1}{2}}$

21.  $\left(\frac{2a^2}{b}\right)^3 \cdot (2ab^2)$

22.  $\sqrt[3]{3}$

23.  $\left(\frac{x}{2}\right)^3 \cdot \left(\frac{4}{x}\right)^2$

24.  $(3x)^{\frac{2}{5}}$

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$$\sqrt{ab} = \sqrt{a}\sqrt{b}$$

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$

25.  $\sqrt{20}$

26.  $\sqrt{\frac{5x^5}{4}}$

27.  $\sqrt{24x^3}$

28.  $\sqrt{\frac{2x^3}{4x^6}}$

$$\sqrt[m]{\sqrt[n]{x}} = \sqrt{mn}{x} = \sqrt[n]{m}{\sqrt{x}}$$

29.  $\sqrt[6]{x^2}$

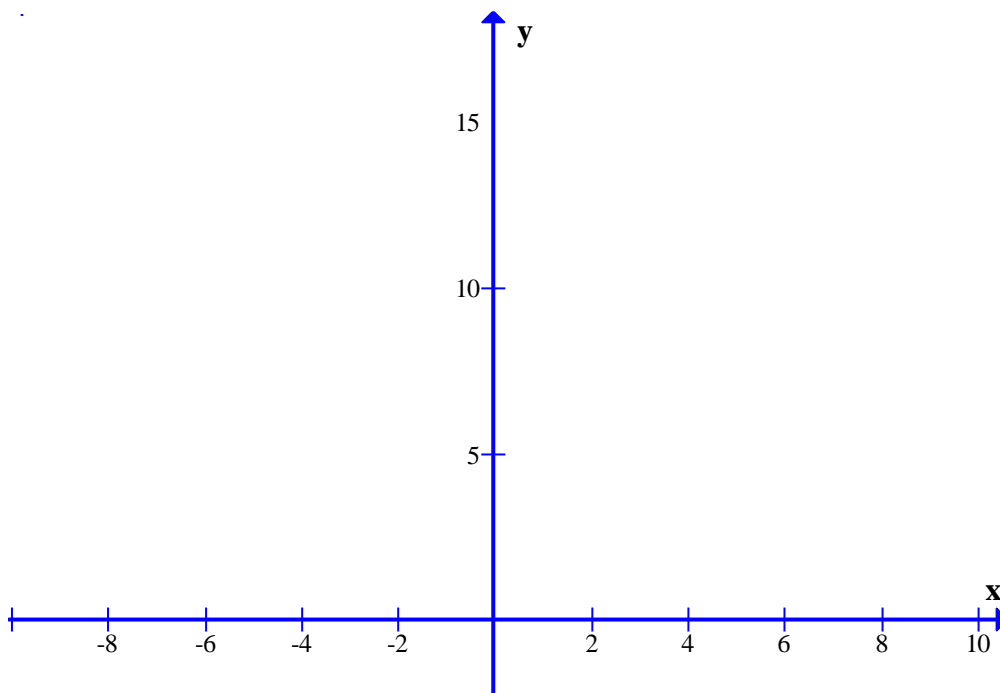
30.  $\sqrt{\sqrt{b}}$

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31. Find  $F(x)$  given the value of  $x$  for the function  $y = 2^{x+3}$ .

<b>x</b>	<b>-1</b>	<b>0</b>	<b>1</b>
<b>y</b>			

32. Draw the graph of  $y = 2^{x+3}$ .

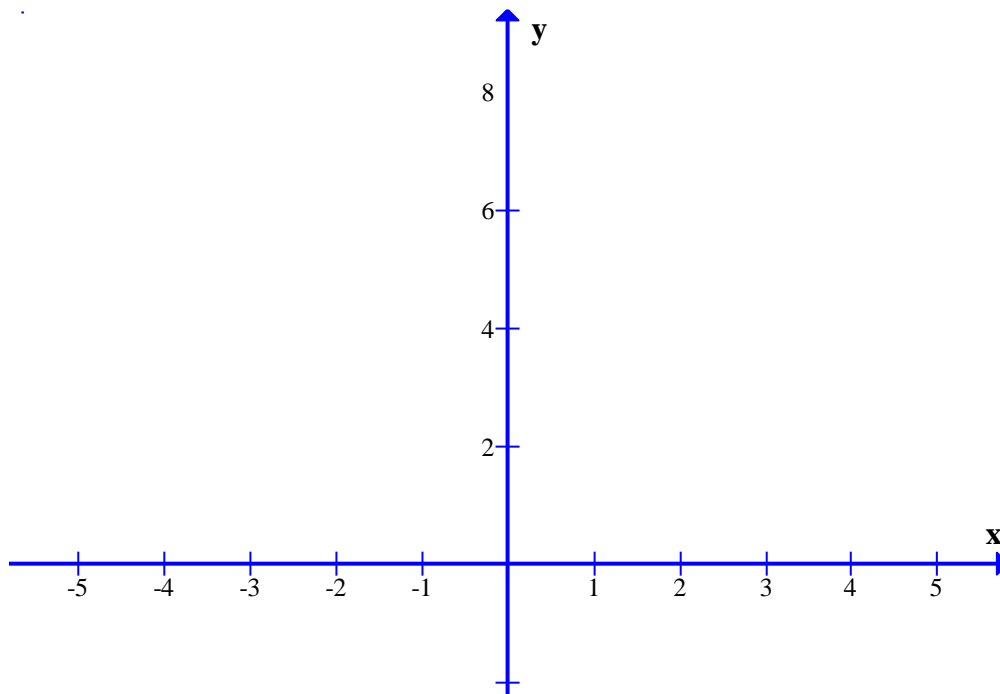


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33. Find  $F(x)$  given the value of  $x$  for the function  $y = \left(\frac{1}{3}\right)^x$ .

<b>x</b>	<b>-1</b>	<b>0</b>	<b>1</b>
<b>y</b>			

34. Draw the graph of  $y = \left(\frac{1}{3}\right)^x$ .



Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

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**35.** A certain type of bacteria doubles their number every hour. If there are 100 bacteria from the start, how many bacteria are there after 7 hours?

**36.** A 53 inches flat screen T.V. cost \$3000 depreciate its price by 3% every 6 months. How much will the price of the T.V. after 2 years?

**37.** \$10000 is invested in a bank with 12% interest for 6 years compounded quarterly. What will be the final amount of the money at the end of 6 years?

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38. Find the 10th term of a geometric sequence with the first element of 5 and a common ratio of 2.

39. Find the sum of the first 6 terms of a sequence with the first element of 6 and a common ratio of  $3/2$ .

40. Suppose you have the following: 2\$ in the first day, 4\$ in the second day, 8\$ in the third day, etc. each day saving double of what you save the preceding day. How many dollar you would have for 15 days?