

Practice Test

Chapter 7.1 -7.6 Test - PLEASE DO NOT WRITE ON THIS TEST. Show all your work on loose-leaf paper and write your final answer on the Answer Document. Include labels where needed.

1-15. Simplify each expression. Keep all final answers in exponential form, if your final answer has fractional exponents.

1. $7a^{-3}t^2$

2. $\frac{6}{a^{-7}b^3}$

3. $(-6)^{-7} \cdot (-6)^8$

4. $3j^8 \cdot j^6$

5. $(3k^{\frac{5}{4}} \cdot 6j^{\frac{1}{3}})(k^{\frac{1}{4}} \cdot 6j^{\frac{1}{6}})$

6. $(y^2)^6$

7. $x^7(x^2)^{10}$

8. $(7k^7)^{-4}$

9. $(4x^5)\left(4x^{\frac{1}{2}}\right)$

10. $(-3a^5b^3)^3(a^3b^2)^3$

11. $\frac{x^8}{x^4}$

12. $\frac{c^3d^8}{c^9d^{-2}}$

13. $\left(\frac{3m}{2}\right)^2$

14. $\left(\frac{x^3}{8p^4}\right)^{-4}$

15. $7x^{-8} \cdot 6x^3 \bullet 2x^4$

16. Find the simplified form of the expression. Give your answer in scientific notation.

$(5 \times 10^3)(5 \times 10^{-10})$

17. Multiple Choice: Does the table represent a linear or an exponential function?

x	1	2	3	4
y	-2	1	4	7

a. linear

b. exponential

18. Suppose an investment of \$1,100 doubles in value every decade. The function $f(x) = 1,100 \cdot 2^x$ gives the value of the investment after x decades. How much is the investment worth after 2 decades?
19. Suppose the population of a town is 12,000 and is growing 3% each year. Predict the population after 12 years.
20. A population of 1,700 cheetahs decreases by 5% per year. How many cheetahs will there be in the population after 14 years? Round your answer to the nearest whole number.

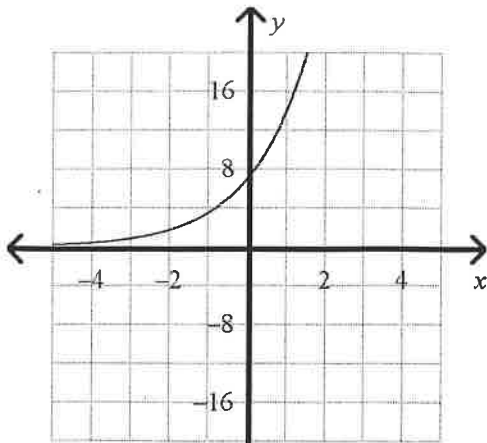
21 & 22. Find the balance in the account.

21. \$4,700 principal earning 2%, compounded annually, after 5 years
22. \$1,800 principal earning 6%, compounded quarterly, after 34 years

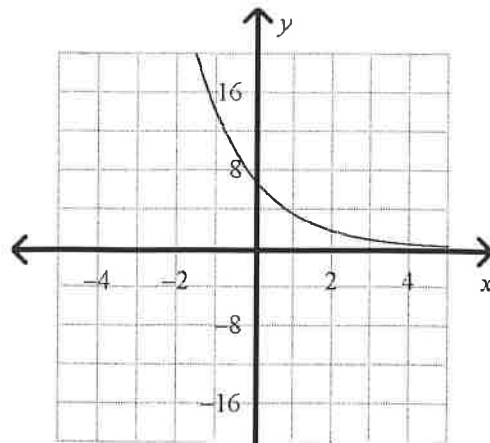
23. What is the graph of the function?

$$y = 7 \cdot 2^x$$

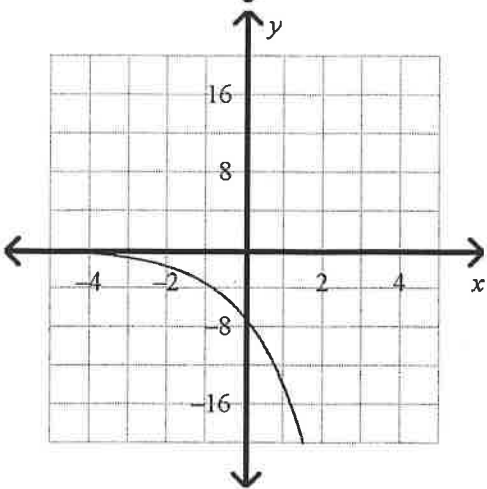
a.



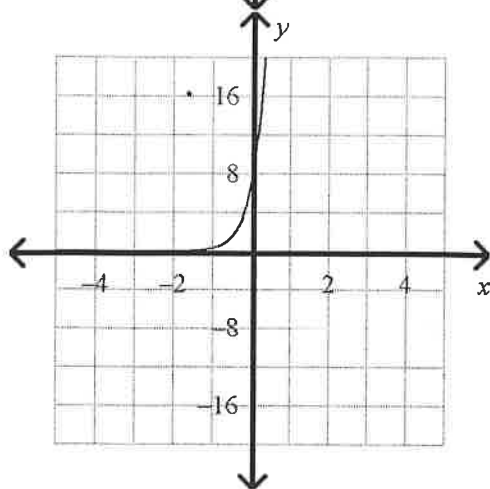
c.



b.



d.



#24 & 25: Write each expression in exponential form.

24. $\sqrt[3]{64y^7}$

25. $\sqrt[5]{(mnp)^2}$

#26: Simplify each expression using properties of exponents and then write the expression in radical form.

26. $(b^3)(b^{10})$

27 & 28: Write each expression in radical form.

27. $18x^{\frac{5}{3}}$

28. $(27x)^{\frac{2}{3}}$

Name

Practice Test KeyAlgebra - Chapter 7.1-7.7

*Calculators Allowed

Formulas:

Exponential Formula: $y = a * b^x$ Compound Interest: $A = P(1 + \frac{r}{n})^{nt}$

1.) $\frac{7t^2}{a^3}$

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

3.) -6 or -6^1

4.) $3j^{14}$

5.) $108k^{\frac{3}{2}}j^{\frac{1}{2}}$

6.) $\frac{y^{12}}{x^{27}}$

7.) $\frac{1}{2401k^{28}}$

8.) $16x^{5\frac{1}{2}}$ or $16x^{\frac{11}{2}}$

9.) $-27a^{24}b^{15}$

10.) $\frac{x^4}{c^6}$

11.) $\frac{9m^2}{4}$

12.) $\frac{4096p^{16}}{x^{12}}$

13.) $\frac{84}{\pi}$

14.) 2.5×10^{-6}

15.) A

16.) $\$4,400$

17.) $17,109$ people

18.) 829 cheetahs

19.) $\$5,189.18$

20.) $\$13,634.97$

21.) A

22.) $4y^{\frac{7}{3}}$

23.) $m^{\frac{2}{5}}n^{\frac{2}{5}}p^{\frac{2}{5}}$

24.) $\sqrt[10]{b^9}$

25.) $18\sqrt[3]{x^5}$

26.) $9\sqrt[3]{x^2}$

Practice Test

Key w/ work

Chapter 7.1 -7.6 Test - PLEASE DO NOT WRITE ON THIS TEST. Show all your work on loose-leaf paper and write your final answer on the Answer Document. Include labels where needed.

1-15. Simplify each expression. Keep all final answers in exponential form, if your final answer has fractional exponents.

1. $7a^{-3}t^2 = \frac{7t^2}{a^3}$

2. $\frac{6}{a^{-7}b^3} = \frac{6a^7}{b^3}$

3. $(-6)^{-7} \cdot (-6)^8 = -6^{-7+8} = -6^1 \text{ or } -6$

4. $3j^8 \cdot j^6 = 3j^{8+6} = 3j^{14}$

5. $(3k^{\frac{5}{4}} \cdot 6j^{\frac{1}{3}})(k^{\frac{1}{4}} \cdot 6j^{\frac{1}{6}}) = (3 \cdot 6 \cdot 6)(k^{\frac{5}{4} + \frac{1}{4}})(j^{\frac{1}{3} + \frac{1}{6}})$

6. $(v^2)^6 = v^{12}$
 $108(k^{\frac{6}{4}})(j^{\frac{2}{6} + \frac{1}{6}}) = 108k^{\frac{3}{2}}j^{\frac{1}{2}}$

7. $x^7(x^2)^{10} = x^7(x^{20}) = x^{27}$

8. $(7k^7)^{-4} = \frac{1}{(7k^7)^4} = \frac{1}{7^4 k^{28}} = \frac{1}{2401k^{28}}$

9. $(4x^5)(4x^{\frac{1}{2}}) = (4 \cdot 4)(x^5 \cdot x^{\frac{1}{2}}) = 16x^{5\frac{1}{2}}$

10. $(-3a^5b^3)^3(a^3b^2)^3 = (-3^3 a^{15} b^9)(a^9 b^6) = -27a^{24} b^{15}$

11. $\frac{x^8}{x^4} = x^4$

12. $\frac{c^3 d^8}{c^9 d^{-2}} = c^{-6} d^{10} = \frac{d^{10}}{c^6}$

13. $(\frac{3m}{2})^2 = \frac{9m^2}{4}$

$$14. \left(\frac{x^3}{8p^4}\right)^{-4} = \left(\frac{8p^4}{x^3}\right)^4 = \frac{8^4 p^{16}}{x^{12}} = \frac{4096p^{16}}{x^{12}}$$

$$15. 7x^{-8} \cdot 6x^3 \cdot 2x^4 = (7 \cdot 6 \cdot 2)(x^{-8} \cdot x^3 \cdot x^4) = 84x^{-1} = \frac{84}{x}$$

16. Find the simplified form of the expression. Give your answer in scientific notation.

$$(5 \times 10^3)(5 \times 10^{-10}) = 25 \times 10^{-7} = 2.5 \times 10^{-6}$$

17. Multiple Choice: Does the table represent a linear or an exponential function?

x	1	2	3	4
y	-2	1	4	7

a. linear

b. exponential

18. Suppose an investment of \$1,100 doubles in value every decade. The function $f(x) = 1,100 \cdot 2^x$ gives the value of the investment after x decades. How much is the investment worth after 2 decades?

$$f(x) = 1,100 \cdot 2^2$$

19. Suppose the population of a town is 12,000 and is growing 3% each year. Predict the population after 12 years.

$$12,000(1 + 0.03)^{12} = 17,109.1 = 17,109$$

20. A population of 1,700 cheetahs decreases by 5% per year. How many cheetahs will there be in the population after 14 years? Round your answer to the nearest whole number.

$$1700(1 - 0.05)^{14} = 829.04 = 829$$

21 & 22. Find the balance in the account.

21. \$4,700 principal earning 2%, compounded annually, after 5 years

22. \$1,800 principal earning 6%, compounded quarterly, after 34 years

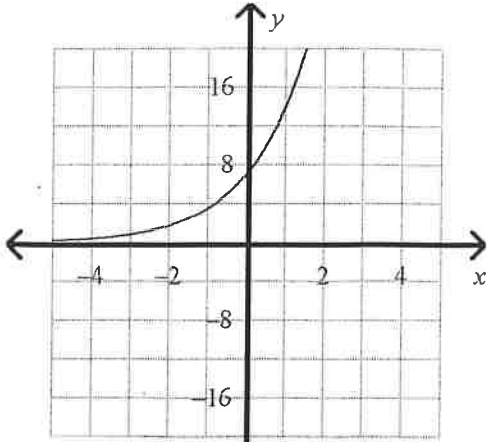
$$21) 4,700 \left(1 + \frac{0.02}{1}\right)^{5(1)} = 5189.179 = 5189.18$$

$$22) 1800 \left(1 + \frac{0.06}{4}\right)^{4(34)} = 13634.97202 = \$13634.97$$

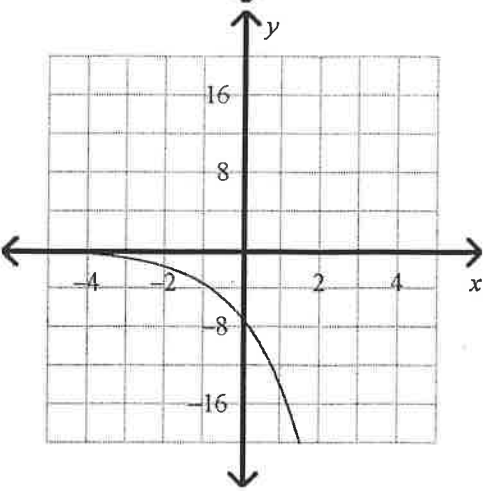
23. What is the graph of the function?

$$y = 7 \cdot 2^x$$

a.

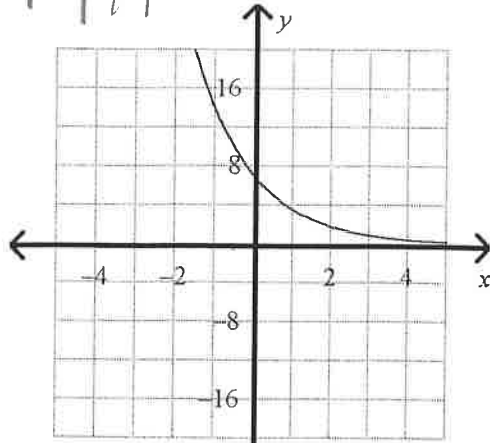


b.



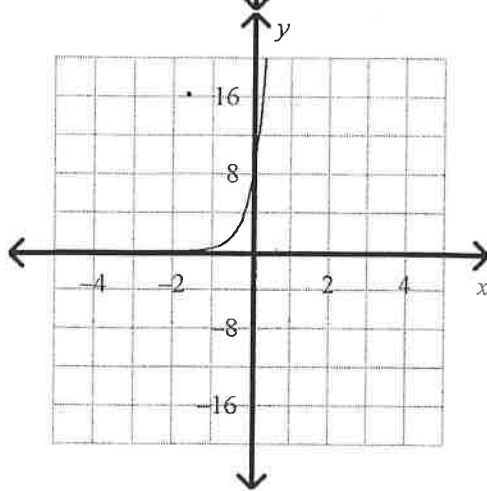
c.

X	Y
-1	3.5
0	7
1	14



Does not cross @ (-1, 3.5)

d.



Does not cross @ (1, 14)

Does not cross @ all ordered pairs

Does not cross @ (0, 7)

#24 & 25: Write each expression in exponential form.

24. $\sqrt[3]{64y^7} = \sqrt[3]{64} \sqrt[3]{y^7} = 4y^{\frac{7}{3}}$

25. $\sqrt[5]{(mnp)^2} = m^{\frac{2}{5}} n^{\frac{2}{5}} p^{\frac{2}{5}}$

#26: Simplify each expression using properties of exponents and then write the expression in radical form.

26. $(b^{\frac{3}{5}})(b^{\frac{3}{10}}) = b^{\frac{6}{10}} \cdot b^{\frac{3}{10}} = b^{\frac{9}{10}} = \sqrt[10]{b^9}$

27 & 28: Write each expression in radical form.

27. $18x^{\frac{5}{3}} = 18\sqrt[3]{x^5}$

28. $(27x)^{\frac{2}{3}} = 27^{\frac{2}{3}} x^{\frac{2}{3}} = \sqrt[3]{27^2} \sqrt[3]{x^2} = 9\sqrt[3]{x^2}$