Practice Test

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

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

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

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. $x^7 \left(x^2\right)^{10}$

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

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

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

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

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

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

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

15. $7x^{-8} \cdot 6x^3$ • $2x^4$

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

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

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.
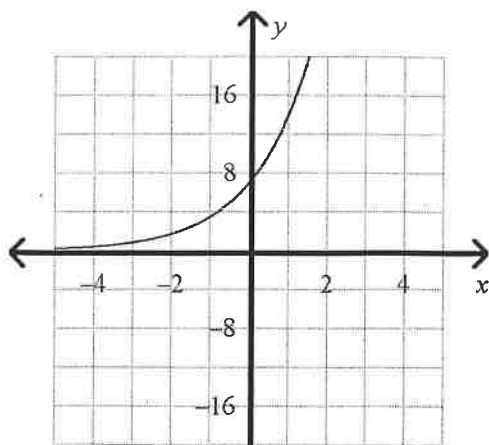
    # 21 & 22. Find the balance in the account.

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

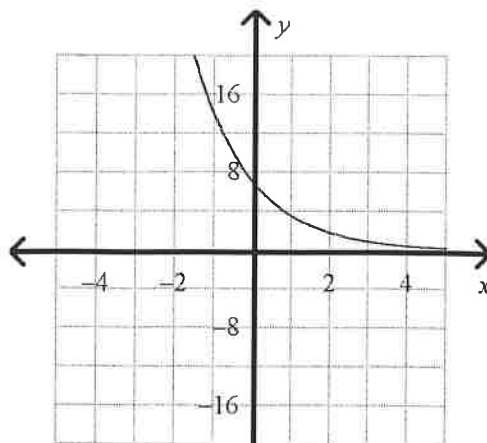22. $1,800 principal earning 6%, compounded quarterly, after 34 years

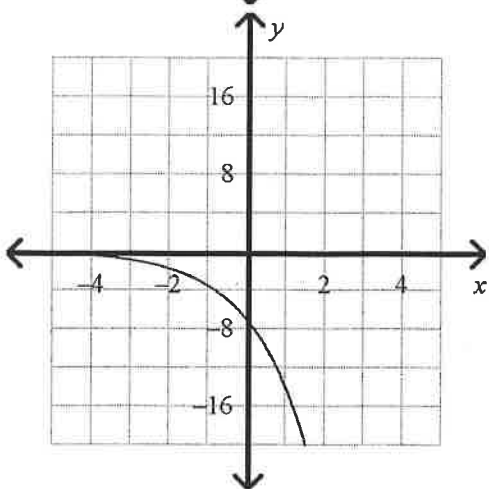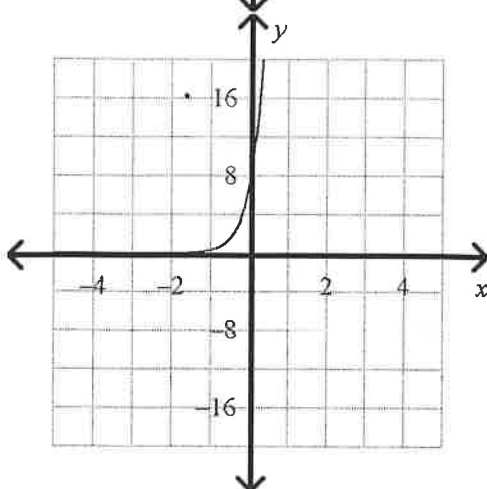23. **What is the graph of the function?**

   $y = 7 \cdot 2^x$

   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. $(b^{\frac{3}{5}})(b^{\frac{3}{10}})$

27 & 28: Write each expression in radical form.

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

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

Name **Practice Test Key**

Algebra - Chapter 7.1-7.7
Calculators Allowed

Formulas:

Exponential Formula: $y = a * b^x$

Compound Interest: $A = P(1 + \dfrac{r}{n})^{nt}$

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

2.) $\dfrac{6a^7}{b^3}$

3.) -6 or -6^1

4.) $3 j^{14}$

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

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

7.)

8.) $\dfrac{1}{2401 K^{28}}$

9.) $16x^{5\frac{1}{2}}$ or $16x^{\frac{11}{2}}$

10.) $-27a^{24}b^{15}$

11.) x^4

12.) $\dfrac{d^{10}}{c^6}$

13.) $\dfrac{9m^2}{4}$

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

15.) $\dfrac{84}{x}$

16.) 2.5×10^{-6}

17.) A

18.) $\$4,400$

19.) $17,109$ people

20.) 829 cheetahs

21.) $\$5,189.18$

22.) $\$13,634.97$

23.) A

24.) $4y^{\frac{1}{3}}$

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

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

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

28.) $9\sqrt[3]{x^2}$

Practice Test

Keep w/ work

Chapter 7.1 -7.6 Test - PLEASE DO NOT WRITE ON THIS TEST. Show all your work on ɔose-leaf aper 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 frational exponents.

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

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

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

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

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

   $108(k^{\frac{6}{4}})(j^{\frac{2}{6}} \cdot j^{\frac{1}{6}})$

   $108k^{\frac{3}{2}}j^{\frac{2}{6}}$

6. $(y^2)^6 = y^{12}$

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

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

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

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

11. $\dfrac{x^8}{x^4} \quad x^4$

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

13. $\left(\dfrac{3m}{2}\right)^2 \quad \dfrac{9m^2}{4}$

1

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

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

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

+3 +3 +3

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.

$12000(1 + 0.03)^{12} = 17109.1 = \boxed{17{,}109}$

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
$\boxed{829}$

 # 21 & 22. Find the balance in the account.

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

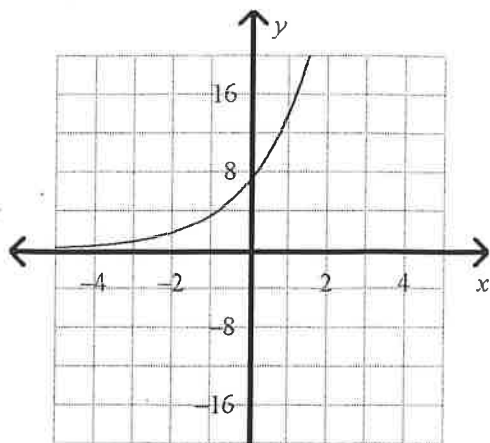22. \$1,800 principal earning 6%, compounded quarterly, after 34 years

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

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

2

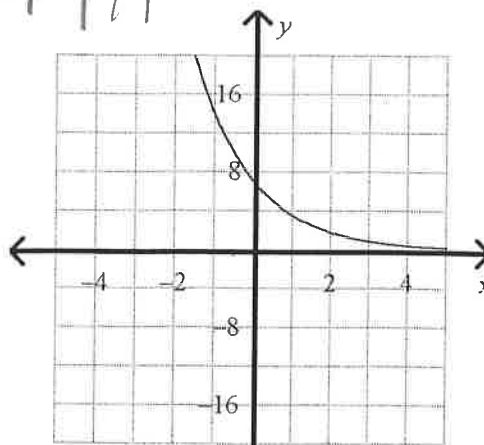23. What is the graph of the function?
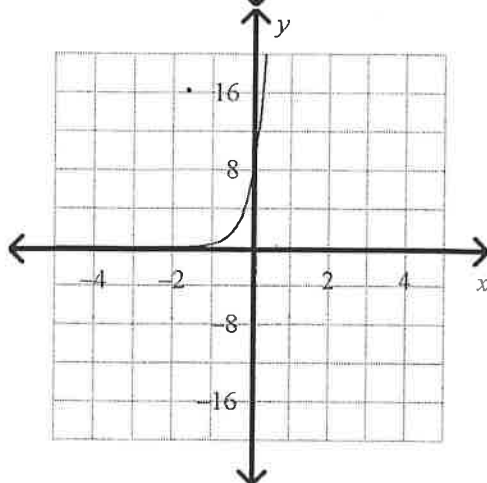
$y = 7 \cdot 2^x$

a.
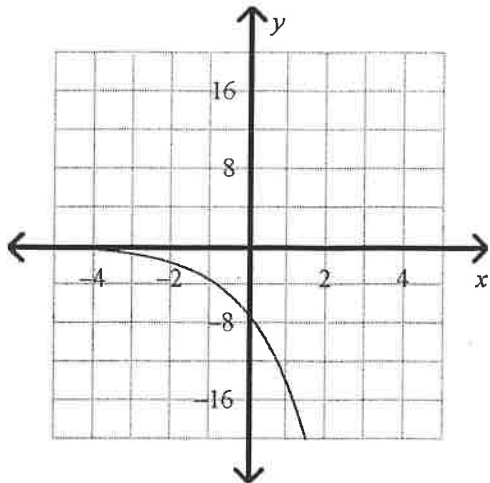
Does cross @ all ordered pairs

b.

Does not cross @ (0,7)

c.

Does not cross @ (-1, 3.5)

d.

Does not cross @ (1,14)

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