

Alg 1 Topic 6 Test Practice

A 1. Write the exponential expression $3x^{\frac{3}{8}}$ in radical form.

- a. $3^8\sqrt{x^3}$ b. $\sqrt[8]{3x^3}$ c. $3^3\sqrt{x^8}$ d. $3^{\frac{3}{8}}\sqrt[8]{x^3}$

not part of power
power not

C 2. Write the radical expression $\sqrt[7]{x^{15}}$ in exponential form.

- a. $8x^{-\frac{7}{15}}$ b. $8x^{\frac{15}{7}}$ c. $8x^{\frac{15}{7}}$ d. $8x^{\frac{7}{15}}$

neg 8 x 7

D 3. Write the radical expression $\sqrt[7]{4^{-10}}$ using rational exponents.

- a. $4^{\frac{1}{7}}$ b. $4^{\frac{7}{10}}$ c. $4^{\frac{1}{10}}$ d. $4^{\frac{10}{7}}$

4 ⁻¹⁰ / 7

same base
Solve each equation for x.

D 4. $6^{3x-9} = 6^{2x+1}$

- a. $\frac{4}{7}$ b. $\frac{10}{7}$ c. -4 d. 10

3x-9 = 2x+1
3x-2x = 1+9
x = 10

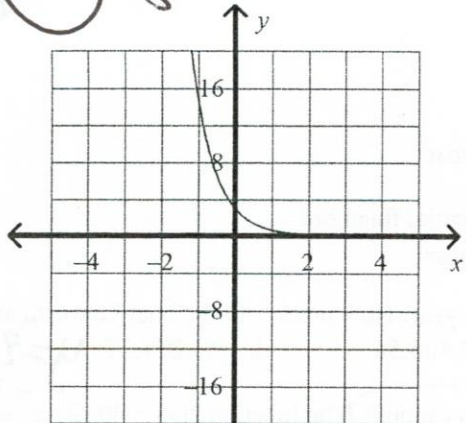
A 5. $4^{6x-2} = 4^{10x}$

- a. $-\frac{1}{2}$ b. $-\frac{3}{4}$ c. $\frac{1}{2}$ d. $\frac{7}{4}$

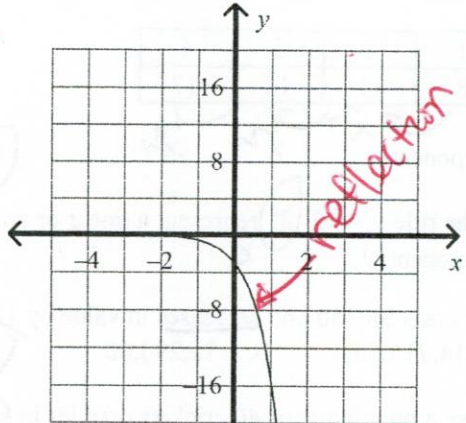
same base
6x-2 = 10x
-6x = 10x-2
-12x = -2
x = 1/6

B

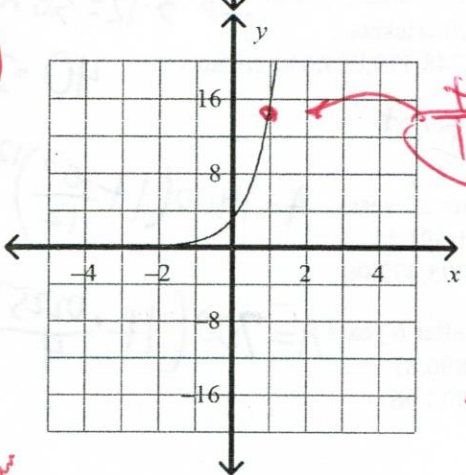
7. $y = 3 \cdot 5^x$ *growth*



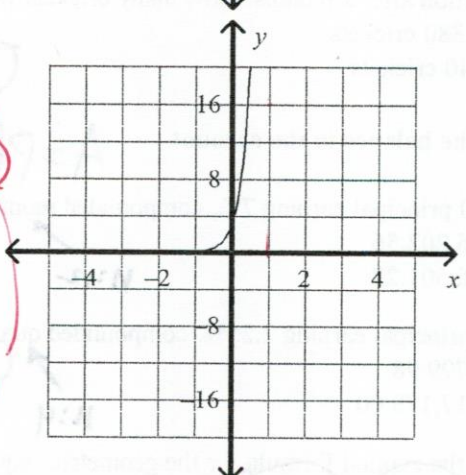
~~c.~~



b.



d.



Write an exponential function for each set of points.

C

8. $(0, 25), (1, 50), (2, 100), (3, 200)$ and $(4, 400)$

a. $f(x) = 2(25)^{x+1}$

b. $f(x) = \frac{1}{2}(25)^x$

~~c.~~ $f(x) = 25(2)^x$

d. $f(x) = 25\left(\frac{1}{2}\right)^{x+1}$

D

9. $(0, 7776), (1, 1296), (2, 216), (3, 36)$ and $(4, 6)$

a. $f(x) = \frac{1}{6}(7776)^x$

b. $f(x) = 6(7776)^{x+1}$

~~c.~~ $f(x) = 7776(6)^{x+1}$ *growth*

d. $f(x) = 7776\left(\frac{1}{6}\right)^x$ *decay*

Initial value

What is the fifth term of the geometric sequence?

- C** 20. 5, 15, 45, ... $\cdot 3 = 135 \cdot 3 = 405$
- a. 1215 c. 405
b. 1875 d. 3645

Write the explicit formula for the geometric sequence. Then find the fifth term in the sequence.

- B** 21. $a_1 = -4, a_2 = 8, a_3 = -16$ $r = -2$ $a \cdot r^{n-1}$
- ~~a.~~ $a_n = -4 \cdot (2)^n; -64$ c. $a_n = -4 \cdot (-2)^n; 128$
b. $a_n = -4 \cdot (-2)^{n-1}; -64$ ~~d.~~ $a_n = -2 \cdot (-4)^{n-1}; -512$

A 22. Write the geometric sequence as a function.

Recursive $\left\{ \begin{array}{l} a_n = \frac{3}{13}(a_{n-1}) \\ a_1 = 30 \end{array} \right.$ $f(n) = a_1(r)^{n-1}$

- a.** $f(n) = 30 \left(\frac{3}{13} \right)^{n-1}$ c. $f(n) = \frac{1}{30} \left(\frac{3}{13} \right)^{n-1}$
b. $f(n) = \frac{3}{13} (30)^{n-1}$ d. $f(n) = \left(30 - \frac{3}{13} \right)^{n-1}$

C 23. A geometric sequence has an initial value of -2 and a common ratio of -3. Write a function to represent the sequence.

- a. $f(n) = -3f(n-1)$ **c.** $f(n) = -2 \cdot (-3)^{n-1}$
b. $f(n) = -2f(n-1)$ d. $f(n) = -3 \cdot (-2)^{n-1}$

$f(n) = a_1(r)^{n-1}$

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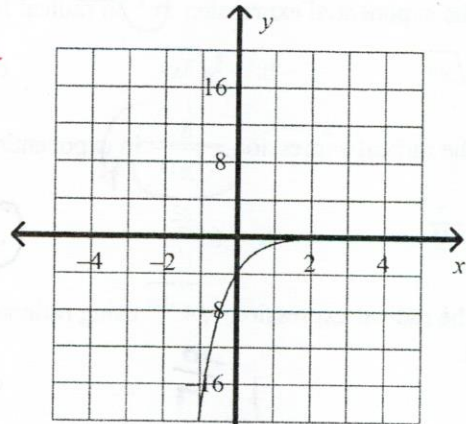
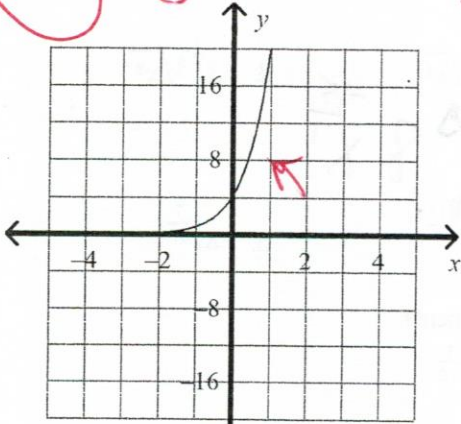
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What is the graph of the function?

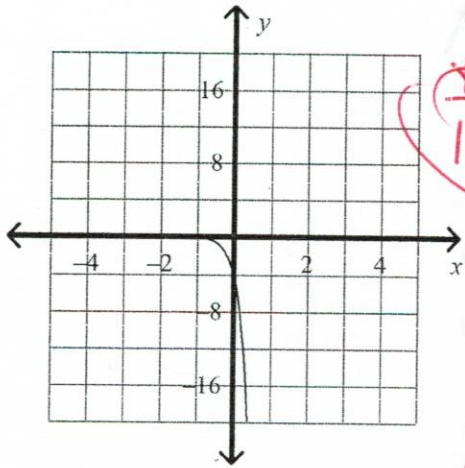
D

6. $y = -4 \cdot 5^x$

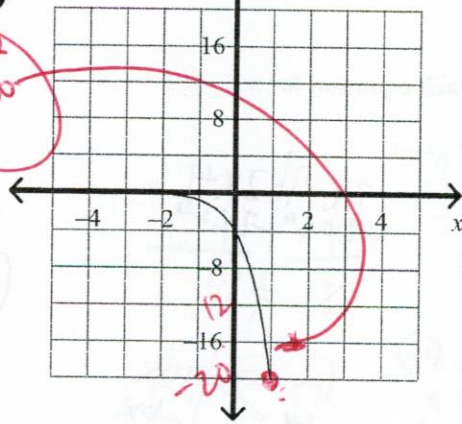
OK reflection growth



b.



d.
8/0
1/-20
-4.5



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$y = a \cdot b^x$
 $y = a(1 \pm r)^x$ rate

B 10. Does the table represent a linear or an exponential function?

x	1	2	3	4
y	8	11	14	17

- a. exponential b. linear

A 11. Does the rule $y = -3 \cdot 2^x$ represent a linear or an exponential function?

- a. exponential b. linear

C 12. A boat costs \$8,350 and decreases in value by 12% per year. How much will the boat be worth after 5 years?

- a. \$14,715.55 b. \$8,290.00 c. \$4,406.56 d. \$3,877.77

D 13. Suppose a population of 40 crickets doubles in size every month. The function $f(x) = 40 \cdot 2^x$ gives the population after x months. How many crickets will there be after 3 years?

- a. 2,880 crickets b. 240 crickets c. 320 crickets d. 2,748,779,069,440 crickets

Find the balance in the account.

B 14. \$1,400 principal earning 7%, compounded monthly, after 22 years

- a. \$6,202.56 b. \$6,501.27 c. \$1,591.11 d. \$395,472.00

$A = P(1 + \frac{r}{n})^{nt}$
 $A = 1400(1 + \frac{0.07}{12})^{12(22)}$
n:12

C 15. \$700 principal earning 2.25%, compounded quarterly, after 6 years

- a. \$799.98 b. \$17,178.00 c. \$800.87 d. \$723.96

$A = 700(1 + \frac{0.0225}{4})^{4(6)}$
n:4

B 16. Write the explicit formula for the geometric sequence.
 $a_1 = -5, a_2 = 20, a_3 = -80$

- a. $a_n = -5 \cdot (-4)^{n-1}$ b. $a_n = -5 \cdot (-4)^{n-1}$ c. $a_n = -4 \cdot (-5)^{n-1}$ d. $a_n = -5 \cdot (4)^n$

Is the sequence geometric? If so, identify the common ratio.

A 17. 6, 12, 24, 48, ...
a. yes; 2 b. yes; -2 c. yes; 4 d. no

D 18. 2, -4, -16, -36, ...
a. yes; -2 b. yes; 2 c. yes; -3 d. no

D 19. Write the recursive formula for the geometric sequence.
 $a_1 = -2, a_2 = 8, a_3 = -32$

- a. $a_n = -4 + a_{n-1}$ b. $a_n = -2 + a_{n-1}$ c. $a_n = -2 \cdot a_{n-1}$ d. $a_n = -4(a_{n-1})$

What is the fifth term of the geometric sequence?

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Write the explicit formula for the geometric sequence. Then find the fifth term in the sequence.

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- Recursive: $a_n = \frac{3}{13}(a_{n-1})$
 $a_1 = 30$ $f(n) = a_1(r)^{n-1}$
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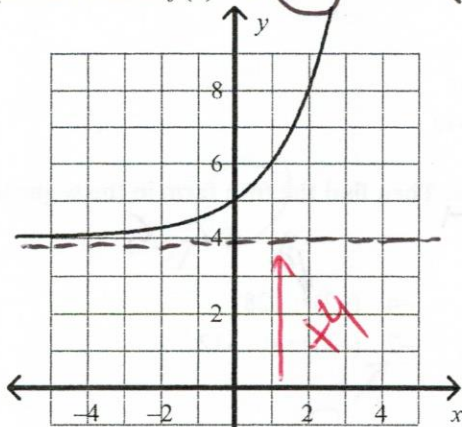
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b. $f(n) = -2f(n-1)$ d. $f(n) = -3 \cdot (-2)^{n-1}$
- $f(n) = a_1(r)^{n-1}$

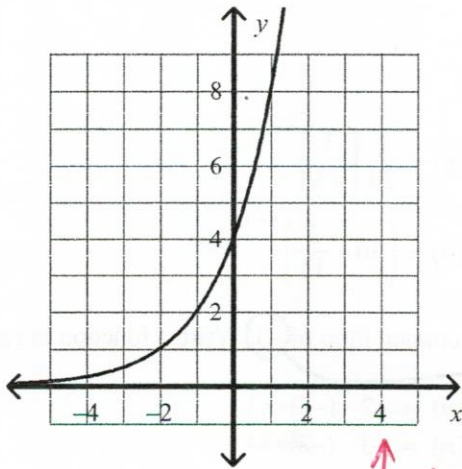
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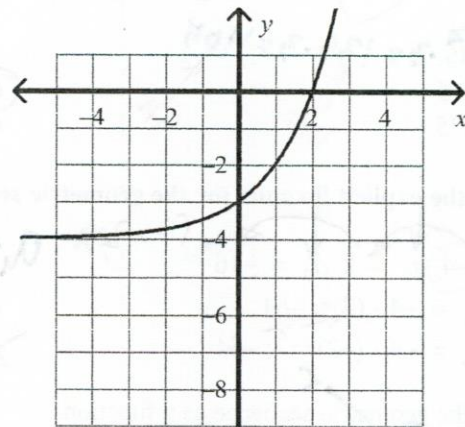
A 24. Graph the function $f(x) = 2^x + 4$.



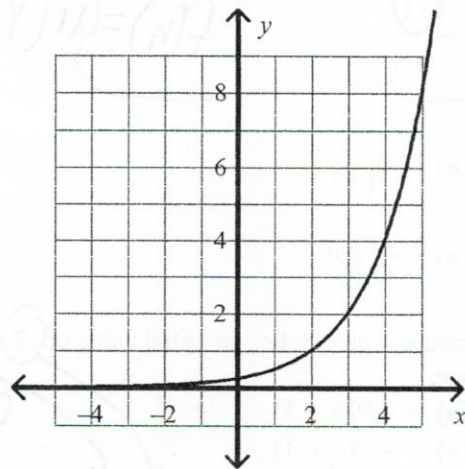
a.



b.



c.



d.

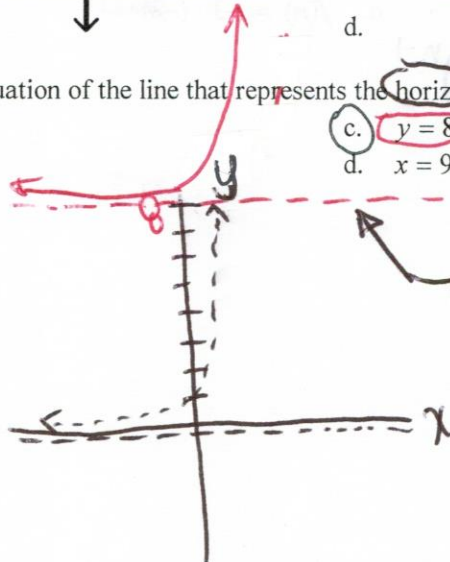
C 25. Determine the equation of the line that represents the horizontal asymptote of the function $f(x) = 10^x + 8$.

a. $y = 9$

b. $x = 8$

c. $y = 8$

d. $x = 9$



k: 8
shift
up