

The given tables in Questions 1 and 2 represent exponential functions.

- a) Write an equation for the function.
- b) Evaluate the exponential function, given the value, x.

1.

x	Y
0	1800
2	4500
4	11250
6	28125

$$11250 = ab^4$$

$$4500 = ab^2$$

$$\frac{11250}{4500} = \frac{ab^4}{ab^2}$$

$$2.5 = b^2$$

$$b = 1.5811$$

Equation:  $f(x) = 1800 \cdot (1.5811)^x$   
 Find  $f(12) = 439453.125$

2.

x	Y
-4	243
0	81
4	27
8	9
12	3

$$9 = ab^8$$

$$27 = ab^4$$

$$\frac{9}{27} = \frac{ab^8}{ab^4}$$

$$\frac{1}{3} = b^4$$

$$b = (\frac{1}{3})^{1/4} = 0.7598$$

Equation:  $f(x) = 81 \cdot (0.7598)^x$   
 Find  $f(-2) = 140.2961$

Using the two values given, find an exponential equation that is representative of the given points.

3.  $f(2) = 5$  and  $f(6) = 20$

$$5 = a(1.4142)^2$$

$$5 = 2a$$

$$5/2 = a$$

$$\frac{20 = ab^6}{5 = ab^2} \rightarrow 4 = b^4$$

$$b = (4)^{1/4} = 1.4142$$

4.  $f(-1) = 1000$  and  $f(3) = 100$

$$1000 = a(0.5623)^3$$

$$1000 = 0.1778a$$

$$a = 0.5623$$

$$\frac{100 = ab^3}{1000 = ab^{-1}} \rightarrow \frac{1}{10} = b^4$$

$$b = (\frac{1}{10})^{1/4} = 0.5623$$

Solve each equation for the given variable.

5.  $81^{3m+2} = 9$

$$(9^2)^{3m+2} = 9^1$$

$$6m+4 = 1$$

$$6m = -3$$

$$m = -1/2$$

7.  $64^{-x-2} = 16^{-3x}$

$$(2^6)^{-x-2} = (2^4)^{-3x}$$

$$-6x-12 = -12x$$

$$-12 = -6x$$

$$x = 2$$

9.  $3^{2a} = \frac{1}{3}$

$$3^{2a} = 3^{-1}$$

$$2a = -1$$

$$a = -1/2$$

6.  $7^{-2r} = 7^{3r-3}$

$$-2r = 3r-3$$

$$-5r = -3$$

$$r = 3/5$$

8.  $27^{-2n} = \frac{1}{243}^{3n}$

$$(3^3)^{-2n} = (3^{-5})^{3n}$$

$$-6n = -15n$$

$$9n = 0$$

$$n = 0$$

10.  $(\frac{1}{27})^{(1-x)} = (\frac{1}{9})^{(-x)}$

$$(3^{-3})^{(1-x)} = (3^{-2})^{-x}$$

$$-3+3x = 2x$$

$$-3 = -x$$

$$x = 3$$

Write each expression in radical form.

11.  $(5x)^{5/4} = 4\sqrt[4]{(5x)^5}$

12.  $p^{3/4} = 4\sqrt[4]{p^3}$

13.  $(4x)^{5/3} = 3\sqrt[3]{(4x)^5}$

Write each expression in exponential form.

4.  $\sqrt{2x^3} = (2x)^{3/2}$

17.  $\sqrt[4]{10x} = (10x)^{1/4}$

15.  $\sqrt[6]{2n^2} = (2n^2)^{1/6}$

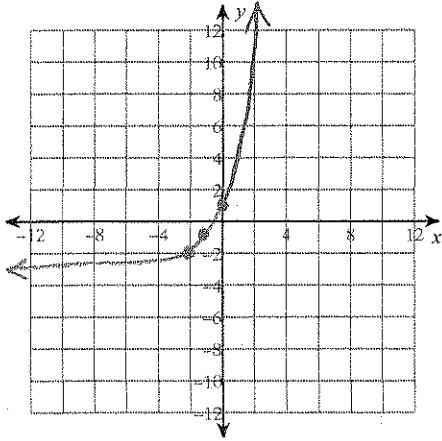
18.  $\sqrt[3]{7m^4} = (7m^4)^{1/3}$

16.  $\frac{1}{\sqrt[3]{7x}} = (7x)^{-1/3}$

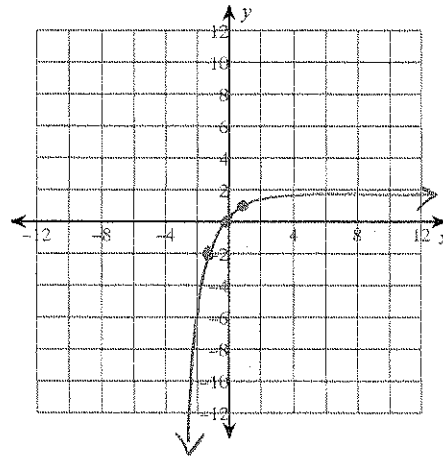
19.  $\frac{1}{\sqrt{x^3}} = x^{-3/2}$

FAT Exponential Review

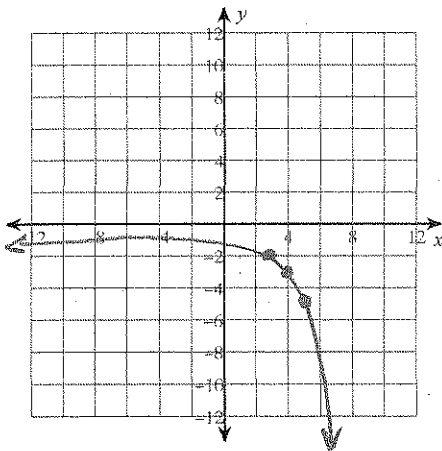
20)  $f(x) = 2^{x+2} - 3$



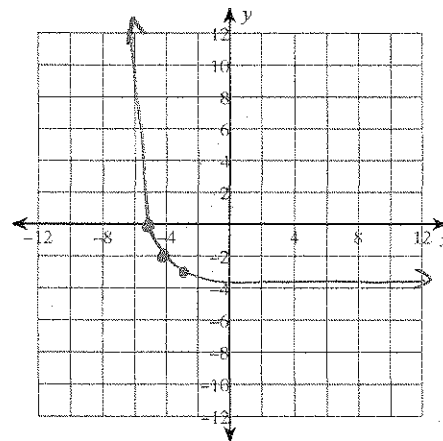
21)  $f(x) = -2^{-(x-1)} + 2$



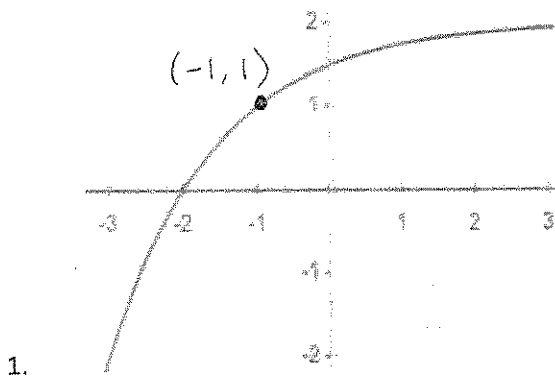
22)  $f(x) = -2^{x-3} - 1$



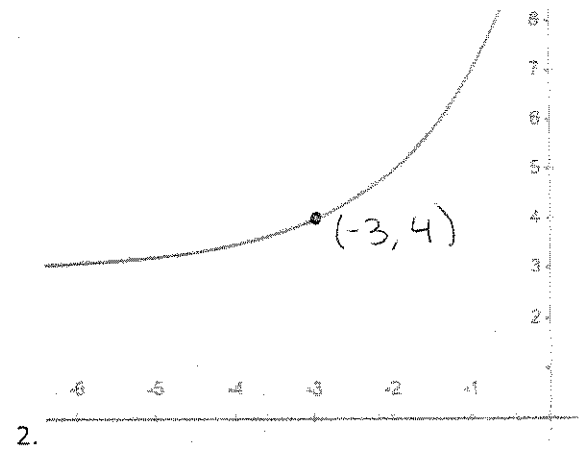
23)  $f(x) = 2^{-(x+3)} - 4$



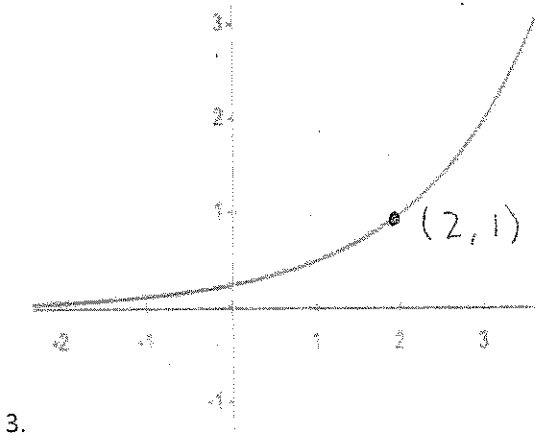
Given the graph, write the exponential function that has an assumed base of 2.



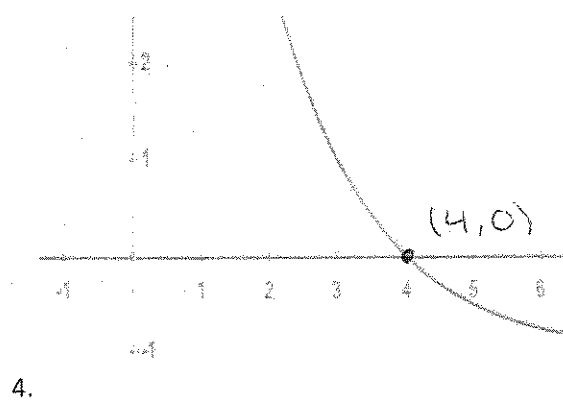
$$y = -2^{-(x+1)} + 2$$



$$y = 2^{x+3} + 3$$



$$y = 2^{x-2}$$



$$y = 2^{-(x-4)} - 1$$