

Assignment 4C-Exponential Functions

Decide if the following are exponential functions. Explain why or why not. If it is, then decide if it is exponential growth or decay.

1. $f(x) = 3(x^4)$
Not Exponential

2. $g(x) = \frac{1}{2}(2^x)$
Yes, exp growth

3. $h(x) = 1.03(-3)^x$
Not exponential

4. $m(x) = 27(3^{-x})$
Yes, exp decay

5. $k(x) = 2.3(.1)^x$
yes, exp decay

6.

x	1	2	3	4
y	5	8	11	14

No, it's linear!

7.

x	1	2	3	4
y	8	12	18	27

Yes, exp growth

8. Find an exponential function in the form $y = ab^x$ that passes through the two points.

a. (0,5) and (4,405)

$y = 5 \cdot 3^x$

b. (5,16) and (6,32)

$y = \frac{1}{2} \cdot 2^x$

c. (10,13) and (7,8)

$y = 2.58(1.18)^x$

9. Evaluate these logarithms

a. $\log_2 128$

7

b. $\log_5 25$

2

c. $\log 10000$

4

d. $\log_3 81$

4

e. $\log_3 \frac{1}{81}$

-4

10. Solve these exponential equations. You can use your calculator for $\log_{10} x$ and $\ln x$

a. $5^x = 125$

$x = 3$

b. $4^x - 12 = 52$

$x = 3$

c. $4(2^x) + 3 = 4$

$x = -2$

d. $10^x = 200$

$x = \log(200)$

e. $4(10^x) = 12.40$

$x = \log\left(\frac{31}{10}\right)$

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f. $e^x = 50$

$\ln(50)$

3.912

g. $4e^x - 12 = 32$

$\ln(11)$

2.398

h. $10^x + 30 = 10$

No Solution