

A2.A.18: Evaluating Logarithmic Expressions: Evaluate logarithmic expressions in any base

- 1 The expression $\log_8 64$ is equivalent to
 - 1) 8
 - 2) 2
 - 3) $\frac{1}{2}$
 - 4) $\frac{1}{8}$
- 2 The expression $\log_5 \left(\frac{1}{25} \right)$ is equivalent to
 - 1) $\frac{1}{2}$
 - 2) 2
 - 3) $-\frac{1}{2}$
 - 4) -2
- 3 If $\log_9 81 = x$, find x .
- 4 Find the value of n : $\log_{100} 10,000 = n$
- 5 For what value of k will the graph of $y = \log_{10} x$ contain the point $(1, k)$?
- 6 Complete the table below for the values of y for the equation $y = \log_2 x$.

x	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4
y					
- 7 If $x = \log_2 9$, find, to the *nearest tenth*, the value of x .
- 8 If $\log_3 5 = x$, find x to the *nearest tenth*.
- 9 Solve for x to the *nearest hundredth*: $\log_7 75 = x$
- 10 Find the value of $\log 58.43$ to four decimal places.
- 11 Find the value of $\log 429.7$ correct to *four decimal places*.
- 12 Find $\log 742.6$ to the *nearest ten-thousandth*.
- 13 Find $\log 1985$ to *four decimal places*.
- 14 Find $\log 2001$ to the *nearest ten-thousandth*.
- 15 The scientists in a laboratory company raise amebas to sell to schools for use in biology classes. They know that one ameba divides into two amebas every hour and that the formula $t = \log_2 N$ can be used to determine how long in hours, t , it takes to produce a certain number of amebas, N . Determine, to the *nearest tenth of an hour*, how long it takes to produce 10,000 amebas if they start with one ameba.
- 16 The expression $\log_2(x - 4)$ is undefined for all values of x such that
 - 1) $x > 1$
 - 2) $x > 0$
 - 3) $x \leq 4$
 - 4) $x \leq 0$
- 17 For which value of x is $y = \log x$ undefined?
 - 1) 0
 - 2) $\frac{1}{10}$
 - 3) π
 - 4) 1.483
- 18 The expression $\log_3(8 - x)$ is defined for all values of x such that
 - 1) $x > 8$
 - 2) $x \geq 8$
 - 3) $x < 8$
 - 4) $x \leq 8$

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Answer Section

1 ANS: 2 REF: fall0909a2

2 ANS: 4 REF: 011124a2

3 ANS:
2

REF: 068110siii

4 ANS:
2

REF: 019407siii

5 ANS:
0

REF: 088508siii

6 ANS:

x	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4
y	-2	-1	0	1	2

REF: 019742siii

7 ANS:
3.2

REF: 018941siii

8 ANS:
1.5

REF: 088637siii

9 ANS:
2.22

REF: 089940siii

10 ANS:
1.7666

REF: 018412siii

11 ANS:
2.6332

REF: 068114b

12 ANS:
2.8708

REF: 018503siii

13 ANS:
3.2978

REF: 068507siii

14 ANS:
3.3012

REF: 088613siii

15 ANS:
13.3

REF: 060125b

16 ANS: 3 REF: fall9904b

17 ANS: 1 REF: 060301b

18 ANS: 3 REF: 010412b