F.LE.A.4: Exponential Equations 3

1 The solution set of $2^{x+1} = 8$ is
1) { }
2) {2}
3) {3}
4) {4}

2 What is the value of x in the equation $3^{x-3} = 1$?
1) 1
2) $\frac{1}{3}$
3) 3
4) 0

3 The solution set of the equation $3^{x^2+x} = 9$ is
1) {1}
2) {–2}
3) {–2, 1}
4) {–1, 2}

4 Solve for x: $2 = 2^{2x+1}$

5 Solve for x: $4^4 = 2^{3x-1}$

6 Solve for x: $2^{3x} = 4^{x-1}$

7 Solve for x: $4^{2x} = 2^{(6x-8)}$

8 Solve for x: $2^{x+2} = 4^{x-1}$

9 Solve for x: $2^{4x-1} = 4^x$

10 If $4^{2x} = 2^{3x+2}$, find the value of x.

11 Solve for x: $4^{3x} = 2^{x+5}$

12 If $4^x = 2^{3x+1}$, find the value of x.

13 If $8^{2x} = 2^{x+5}$, what is the value of x?

14 Solve for x: $8^{x-2} = 2^x$

15 Solve for x: $2^{2x} = 8^{5-x}$

16 Solve for x: $8^x = 2^{(x+6)}$

17 Solve for x: $8^{\frac{1}{3}} = 2^{x+1}$

18 Solve for x: $2^{x+3} = 64$

19 Solve for y: $2^{(y-3)} = \frac{1}{16}$

20 If $25 - 3^2 = 2^x$, what is the value of x?

21 Solve for x: $3^{x^2+4x} = 3^{-4}$

22 Solve for x: $3^x = 9^{x-1}$

23 Solve for y: $3^{y+1} = 9^{y-1}$

24 Solve the equation $9^{(x^2+x)} = 3^4$ for all values of x. [*Only an algebraic solution will be accepted*.]

25 Solve for x: $3^{2x-1} = 27$

26 Solve for x: $3^{2x+1} = 27^x$

27 Solve for x: $3^x = 27^{\frac{2}{3}}$

28 Solve for x: $4^{(3x+5)} = 16$

29 If $5^{x^2-2x} = 1$, find the positive value of x.

30 If $7^{(x^2+x)} = 49$, find the positive value of x.

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Answer Section

1 ANS: 2 REF: 019916siii
2 ANS: 3 REF: 089819siii
3 ANS: 3 REF: 010222siii
4 ANS:
0

REF: 018706siii
5 ANS:
3

REF: 018906siii
6 ANS:
−2

REF: 089309siii
7 ANS:
4

REF: 080204siii
8 ANS:
4

REF: 089609siii
9 ANS:
$\frac{1}{2}$

REF: 060107siii
10 ANS:
2

REF: 018415siii
11 ANS:
1

REF: 068416siii
12 ANS:
−1

REF: 088410siii
13 ANS:
1

REF: 088506siii

14 ANS:
3

REF: 088608siii
15 ANS:
3

REF: 019406siii
16 ANS:
3

REF: 069607siii
17 ANS:
0

REF: 068707siii
18 ANS:
3

REF: 068901siii
19 ANS:
−1

REF: 019810siii
20 ANS:
4

REF: 010101siii
21 ANS:
−2

REF: 088902siii
22 ANS:
2

REF: 089014siii
23 ANS:

$$3^{y+1} = \left(3^2\right)^{y-1}$$

$$3^{y+1} = 3^{2y-2}$$

$$y + 1 = 2y - 2$$

$$3 = y$$

REF: 019706siii

24 ANS:
$-2, 1$

REF: 019541siii
25 ANS:
2

REF: 068801siii
26 ANS:
1

REF: 010004siii
27 ANS:
2

REF: 019604siii
28 ANS:
-1

REF: 069704siii
29 ANS:
2

REF: 069412siii
30 ANS:
1

REF: 089702siii