

A.CED.A.1: Exponential Equations 1

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

- 1) $\{1\}$
- 2) $\{-2\}$
- 3) $\{-2, 1\}$
- 4) $\{-1, 2\}$

2 Determine the value of x and y if $2^y = 8^x$ and

$$3^y = 3^{x+4}.$$

- 1) $x = 6, y = 2$
- 2) $x = -2, y = -6$
- 3) $x = 2, y = 6$
- 4) $x = y$

3 What is the value of x in the equation $3^{x-3} = 1$?

- 1) 1
- 2) $\frac{1}{3}$
- 3) 3
- 4) 0

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

5 Solve for m : $3^{m+1} - 5 = 22$

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

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

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

9 Solve algebraically for x : $9^{3x} = 3^{3x+1}$

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

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

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

13 Solve algebraically for x : $5^{4x} = 125^{x-1}$

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

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

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Answer Section

1 ANS: 3 REF: 010222siii

2 ANS: 3

$$2^y = 8^x$$

$$2^y = (2^3)^x \quad 3x = x + 4$$

$$y = 3x \quad x = 2$$

$$y = 3x$$

$$3^y = 3^{x+4} \quad y = x + 4$$

$$y = 2 + 4 = 6$$

$$y = x + 4$$

REF: 080118b

3 ANS: 3 REF: 089819siii

4 ANS:

-2

REF: 088902siii

5 ANS:

$$3^{m+1} - 5 = 22$$

$$3^{m+1} = 27$$

$$\log 3^{m+1} = \log 27$$

$$2. (m+1)\log 3 = \log 27$$

$$m+1 = \frac{\log 27}{\log 3}$$

$$m+1 = 3$$

$$m = 2$$

$$3^{m+1} - 5 = 22$$

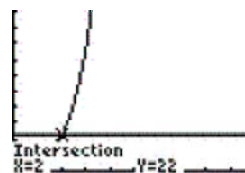
$$3^{m+1} = 27$$

$$3^{m+1} = 3^3$$

$$m+1 = 3$$

$$m = 2$$

Plot1 Plot2 Plot3
 \Y1=3^(X+1)-5
 \Y2=22
 \Y3=
 \Y4=
 \Y5=
 \Y6=
 \Y7=



REF: 060522b

6 ANS:

-2, 1

REF: 019541siii

7 ANS:

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

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

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

$$3 = y$$

REF: 019706siii

8 ANS:
1

REF: 010004siii

9 ANS:

$$9^{3x} = 3^{3x+1}$$

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

$$3^{6x} = 3^{3x+1}$$

$$\frac{1}{3} \cdot 6x = 3x + 1$$

$$3x = 1$$

$$x = \frac{1}{3}$$

REF: 060923b

10 ANS:
2

REF: 068801siii

11 ANS:
2

REF: 089014siii

12 ANS:
2

REF: 019604siii

13 ANS:

$$5^{4x} = (5^3)^{x-1}$$

$$4x = 3x - 3$$

$$x = -3$$

REF: 061528a2

14 ANS:
1

REF: 089702siii

15 ANS:
2

REF: 069412siii