Name: _____

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.

A.CED.A.1: Exponential Equations 1
Answer Section

1 ANS: 3 REF: 010222siii

2 ANS: 3

$2^y = 8^x$

$2^y = (2^3)^x$

$y = 3x$

$3x = x + 4$

$x = 2$

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

$y = x + 4$

$y = 2 + 4 = 6$

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

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

$m + 1 = 3$

$m = 2$

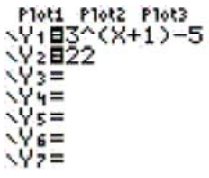
$3^{m+1} - 5 = 22$

$3^{m+1} = 27$

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

$m + 1 = 3$

$m = 2$



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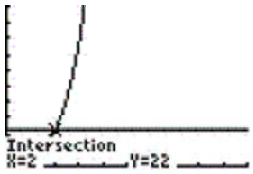

REF: 060522b

6 ANS:
–2, 1

REF: 019541siii

7 ANS:

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

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

$y + 1 = 2y - 2$

$3 = y$

REF: 019706siii

8 ANS:
1

REF: 010004siii

9 ANS:

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

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

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

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

$3x = 1$

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

REF: 060923b

10 ANS:
2

REF: 068801siii

11 ANS:
2

REF: 089014siii

12 ANS:
2

REF: 019604siii

13 ANS:

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

$4x = 3x - 3$

$x = -3$

REF: 061528a2

14 ANS:
1

REF: 089702siii

15 ANS:
2

REF: 069412siii