

A2.A.27: Exponential Equations 1: Solve exponential equations with and without common bases

- 1 The solution set of $2^{x^2+2x} = 2^{-1}$ is
 - 1) $\{1\}$
 - 2) $\{-1\}$
 - 3) $\{-1, 1\}$
 - 4) $\{\}$
- 2 The solution set of $4^{x^2+4x} = 2^{-6}$ is
 - 1) $\{1, 3\}$
 - 2) $\{-1, 3\}$
 - 3) $\{-1, -3\}$
 - 4) $\{1, -3\}$
- 3 The solution set of $2^{x+1} = 8$ is
 - 1) $\{\}$
 - 2) $\{2\}$
 - 3) $\{3\}$
 - 4) $\{4\}$
- 4 If $2^{4x+1} = 8^{x+a}$, which expression is equivalent to x ?
 - 1) $a - 1$
 - 2) $3a - 1$
 - 3) $\frac{a-1}{15}$
 - 4) $\frac{a-1}{3}$
- 5 The solution set of the equation $3^{x^2+x} = 9$ is
 - 1) $\{1\}$
 - 2) $\{-2\}$
 - 3) $\{-2, 1\}$
 - 4) $\{-1, 2\}$
- 6 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) $x = y$
- 7 If $2^{(16x^2-8x-3)} = 1$, what does x equal?
 - 1) $\frac{1}{4}$, only
 - 2) $\frac{3}{4}$, only
 - 3) $\frac{1}{4}$ and $-\frac{3}{4}$
 - 4) $-\frac{1}{4}$ and $\frac{3}{4}$
- 8 What is the value of x in the equation $3^{x-3} = 1$?
 - 1) 1
 - 2) $\frac{1}{3}$
 - 3) 3
 - 4) 0
- 9 If $0^\circ < \theta < 360^\circ$, the solutions of the equation $9^{\sin \theta} = 3$ are 30° and
 - 1) 150°
 - 2) 210°
 - 3) 320°
 - 4) 330°

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Answer Section

1 ANS: 2

$$2^{x^2+2x} = 2^{-1}$$

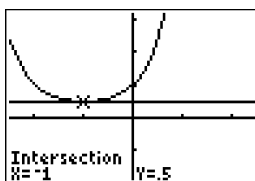
$$x^2 + 2x = -1$$

$$x^2 + 2x + 1 = 0$$

$$(x+1)(x+1) = 0$$

$$x = -1$$

Plot1 Plot2 Plot3
 $\sqrt{Y_1} = 2^{(X^2+2X)}$
 $\sqrt{Y_2} = .5$
 $\sqrt{Y_3} =$
 $\sqrt{Y_4} =$
 $\sqrt{Y_5} =$
 $\sqrt{Y_6} =$
 $\sqrt{Y_7} =$



REF: 060612b

2 ANS: 3

$$4^{x^2+4x} = 2^{-6}$$

$$2x^2 + 8x = -6$$

$$(2^2)^{x^2+4x} = 2^{-6}$$

$$2x^2 + 8x + 6 = 0$$

$$2^{2x^2+8x} = 2^{-6}$$

$$x^2 + 4x + 3 = 0$$

$$(x+3)(x+1) = 0$$

$$x = -3 \quad x = -1$$

REF: 061015a2

3 ANS: 2

REF: 019916siii

4 ANS: 2

$$2^{x+1} = 8^{x+a}$$

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

$$2^{x+1} = 2^{3x+3a}$$

$$4x+1 = 3x+3a$$

$$x = 3a-1$$

REF: 060814b

5 ANS: 3

REF: 010222siii

6 ANS: 3

$$2^y = 8^x$$

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

$$y = 3x$$

$$3x = x + 4$$

$$x = 2$$

$$y = 3x$$

$$y = x + 4$$

$$y = 2 + 4 = 6$$

$$y = x + 4$$

REF: 080118b

7 ANS: 4

$$2^{(16x^2-8x-3)} = 1$$

$$2^{(16x^2-8x-3)} = 2^0$$

$$16x^2 - 8x - 3 = 0$$

$$(4x + 1)(4x - 3) = 0$$

$$x = -\frac{1}{4} \quad x = \frac{3}{4}$$

REF: 080819b

8 ANS: 3

REF: 089819siii

9 ANS: 1

REF: 010325siii

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Plot1 Plot2 Plot3
Y1=2^(16X^2-8X-3)
Y2=1
Y3=
Y4=
Y5=
Y6=

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