

NAME: _____

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

1. 060612b, P.I. A2.A.27

The solution set of $2^{x^2+2x} = 2^{-1}$ is

[A] {1} [B] {-1, 1} [C] {} [D] {-1}

2. 010709b, P.I. A2.A.27

What is the value of b in the equation

$$4^{2b-3} = 8^{1-b}?$$

[A] $\frac{-3}{7}$ [B] $\frac{10}{7}$ [C] $\frac{7}{9}$ [D] $\frac{9}{7}$

3. 060303b, P.I. A2.A.27

What is the value of x in the equation

$$81^{x+2} = 27^{5x+4}?$$

[A] $\frac{4}{11}$ [B] $-\frac{2}{11}$ [C] $-\frac{3}{2}$ [D] $-\frac{4}{11}$

4. fall9907b, P.I. A2.A.27

Solve for x : $64^{x-2} = 256^{2x}$

[A] $\frac{-6}{5}$ [B] $\frac{-1}{5}$ [C] $\frac{-6}{11}$ [D] 0

5. 080819b, P.I. A2.A.27

If $2^{(16x^2-8x-3)} = 1$, what does x equal?

[A] $-\frac{1}{4}$ and $\frac{3}{4}$ [B] $\frac{1}{4}$ and $-\frac{3}{4}$

[C] $\frac{3}{4}$, only [D] $\frac{1}{4}$, only

6. 060814b, P.I. A2.A.27

If $2^{4x+1} = 8^{x+a}$, which expression is equivalent to x ?

[A] $3a - 1$ [B] $\frac{a-1}{15}$

[C] $a - 1$ [D] $\frac{a-1}{3}$

7. 080118b, P.I. A2.A.27

Determine the value of x and y if $2^y = 8^x$ and $3^y = 3^{x+4}$.

[A] $x = 2, y = 6$ [B] $x = 6, y = 2$

[C] $x = y$ [D] $x = -2, y = -6$

8. 010404b, P.I. A2.A.27

What is a positive value of x for which

$$9^{-\cos x} = \frac{1}{3}?$$

[A] 60° [B] 45° [C] 30° [D] 90°

9. 010626b, P.I. A2.A.27

Solve algebraically for x : $8^{2x} = 4^6$

10. 060923b, P.I. A2.A.27

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

11. 060422b, P.I. A2.A.27

Solve algebraically for x : $27^{2x+1} = 9^{4x}$

12. 060522b, P.I. A2.A.27

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

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[1] D

[2] D

[3] D

[4] A

[5] A

[6] A

[7] A

[8] A

[2] 2, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] 2, but a method other than an algebraic solution is used.

or [1] 2, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[9] incorrect procedure.

[2] $\frac{1}{3}$, and appropriate algebraic work is shown.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] The equation $(3^2)^{3x} = 3^{3x+1}$ or an equivalent equation is written, but no further correct work is shown.

or [1] $\frac{1}{3}$, but a method other than algebraic is used.

or [1] $\frac{1}{3}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously
[10] incorrect procedure.

[2] $\frac{3}{2}$, and appropriate work is shown.

[1] Appropriate work is shown, but one conceptual error or one computational error is made.

or [1] $\frac{3}{2}$, but a graphic solution is provided.

or [1] $\frac{3}{2}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[11] incorrect procedure.

[2] 2, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] 2, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[12] incorrect procedure.