

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]  $60^\circ$  [B]  $45^\circ$  [C]  $30^\circ$  [D]  $90^\circ$

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

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

[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.