**April 2017**

3. For what value of x is the equation 22x+7 = 215 true?

A. 2

B. 4

C. 11

D. 16

E. 44

16. Which of the following expressions is equivalent to x2/3 ?

F. x2 / 3

G. x(2) / 3

H. sqrt(x3)

J. cuberoot(x)

K. cuberoot(x2)

**June 2017**

27. For all a > 0, which of the following expressions is equal to a-2?

1. -2a
2. -a2
3. 1/(2a)
4. 1/(rad a)
5. 1/(a2)

33. Which of the following is equivalent to 82 \* 40.5?

1. 27
2. 44.5
3. 82.5
4. 162
5. 32

**April 2016**

58. If x and a are positive rational numbers such that x2a = 3, then x6a = ?

1. 6
2. 9
3. 12
4. 18
5. 27

**June 2016**

4. 3x9 \* 5x9 is equivalent to:

1. 8x18
2. 8x81
3. 15x9
4. 15x18
5. 15x81

51. For what real value of x is (3x34)/(34)5 = 1/9 true?

1. 3
2. 5
3. 11
4. 14
5. 16

**December 2016**

22. Given u and v such that (a2)u = a12 and (av)2 = a8 for all positive a, what is au+v?

1. a5
2. a10
3. a16
4. a20
5. a24

**April 2015**

36. Whenever x and y are nonzero, (8x5y4)(6x13y3) / 16x6y14 = ?

F. 3x3y2

G. 3x3/y2

H. 3x6/16y21

J. 3x12/y7

K. 3x59/y2

57. For how many integers x is the equation 3x+1 = 9x-2 true?

1. 0
2. 1
3. 2
4. 3
5. An infinite number

**June 2015**

47. For all nonzero values of *x*, (12*x*6 – 9*x*2) / 3*x*2 = ?

A. 4*x*3 – 3*x*

B. 4*x*3 – 3

C. 4*x*4 – 9*x*2

D. 4*x*4 – 3*x*

E. 4*x*4 – 3

56. Whenever j and k are positive integers such that (rad 3)j = 27k, what is the value of j/k?

1. ⅙
2. 3/2
3. 3
4. 4
5. 6

**December 2015**

4. For nonzero values of x and y, which of the following expressions is equivalent to -(18x3y2)/(3xy)?

1. -6x2y
2. -6x3y2
3. -6x4y3
4. -15x2y
5. -21x2y

56. For all positive real numbers x, which of the following expressions is equivalent to

[(x24)/(x6)]/[1/(x2)]?

1. x2
2. x8
3. x12
4. x16
5. x20