Q:1 Directions: The roots of a quadratic equation are given:
2/5 and 2/3
If a in the quadratic equation formed by the given roots is divided by 5, b is divided by 4, and c is divided by -1 then, find the ratio of all positive roots.
1. 4 : 8 : 3
2. 4 : 3 : 7
3. 3 : 5 : 30
4. 1 : 5 :15
5. 2 : 10 : 15

Q:2 Directions: The roots of a quadratic equation are given:
2/5 and 2/3
If a in the quadratic equation formed by the given roots is divided by 5, b is divided by 4, and c is divided by -1 then, find the positive root of the newly formed equation.
1. 2
2. 3
3. 1
4. 1/2
5. 3/2

Q:3 Directions: Three quadratic equations are as follows.
A. $2x^2 + 3x - \sqrt[3]{19683} = 0$
B. $3x^2 + 16x - \sqrt[3]{6859} = 0$
C. $4x^2 + 12x - \surd 256 = 0$
If the roots of equation C are divided by 4 then, find the sum of the square of the roots.
1. 11/13
2. 19/17
3. 13/17
4. 17/16
5. 15/16

Q:4 Directions: Three quadratic equations are as follows.
A. $2x^2 + 3x - \sqrt[3]{19683} = 0$
B. $3x^2 + 16x - \sqrt[3]{6859} = 0$
C. $4x^2 + 12x - \surd 256 = 0$
Find the ratio of the square of the roots of equation A.
1. 81 : 4
2. 4 : 81
3. 7 : 4
4. 6 : 7
5. 4 : 9

Q:5 Directions: Three quadratic equations are as follows.
A. $2x^2 + 3x - \sqrt[3]{19683} = 0$
B. $3x^2 + 16x - \sqrt[3]{6859} = 0$
C. $4x^2 + 12x - \surd 256 = 0$
If 2 is added to all positive roots then, find the ratio between the Positive root of equation A to the sum of positive roots of equations B and C.
1. 3 : 7
2. 6 : 5
3. 5 : 6
4. 4 : 3
5. 3 : 4

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Answer Key

1. (3)	**2.** (1)	**3.** (4)	**4.** (5)	**5.** (3)

Answers and Solutions

Q:1 The correct answer is **Option 3** i.e. **3 : 5 : 30**.
The standard form of the equation is a - b + c = 0 and,
b will be in the form of b_1/a, b_2/a
Thus, from the given roots i.e. 2/5 and 2/3 quadratic equation will be
$15x^2 - 16x + 4$ [you can recheck its roots by solving this quadratic equation]
Now, according to the question
If a in the quadratic equation is divided by 5, b is divided by 4 and c is divided by -1
$15/5x^2 - 16/4x + 4/-1 = 0$
$3x^2 - 4x - 4 = 0$
$3x^2 - 6x + 2x - 4 = 0$
$3x(x - 2) + 2(x - 2) = 0$
$(3x + 2)(x - 2) = 0$
$x = -2/3, 2$
Ratio = 2/5 : 2/3 : 2 = 1/5 : 1/3 : 2 = 3 : 5 : 30

Q:2 The correct answer is **Option 1** i.e. **2**.
The standard form of the equation is a - b + c = 0 and,
b will be in the form of b_1/a, b_2/a
Thus, from the given roots i.e. 2/5 and 2/3 quadratic equation will be
$15x^2 - 16x + 4$ [you can recheck its roots by solving this quadratic equation]
Now, according to the question
If a in the quadratic equation is divided by 5, b is divided by 4 and c is divided by -1
$15/5x^2 - 16/4x + 4/-1 = 0$
$3x^2 - 4x - 4 = 0$
$3x^2 - 6x + 2x - 4 = 0$
$3x(x - 2) + 2(x - 2) = 0$
$(3x + 2)(x - 2) = 0$
$x = -2/3, 2$
Hence, the positive root of the equation is 2

Q:3 The correct answer is **Option 4** i.e. **17/16.**
A. $2x^2 + 3x - \sqrt[3]{19683} = 0$
$2x^2 + 3x - 27 = 0$
$2x^2 + 9x - 6x - 27 = 0$
$x(2x + 9) - 3(2x + 9) = 0$
$(x - 3)(2x + 9) = 0$
$x = 3, -9/2$
B. $3x^2 + 16x - \sqrt[3]{6859} = 0$
$3x^2 + 16x - 19 = 0$
$3x^2 + 19x - 3x - 19 = 0$
$x(3x + 19) -1(3x + 19) = 0$
$(x - 1)(3x + 19) = 0$
$x = 1, -19/3$
C. $4x^2 + 12x - \sqrt{256} = 0$
$4x^2 + 12x - 16 = 0$
$4x^2 + 16x - 4x - 16 = 0$
$4x(x + 4) - 4(x + 4) = 0$
$(4x - 4)(x + 4) = 0$
$x = 1, -4$
Now, according to the question,
If the roots of equation C are divided by 4 then, find the sum of the square of the roots.
Roots are divided by 4 = 1/4 , -4/4 = 1/4, -1
$(1/4)^2 + (-1)^2 = 1/16 + 1 = (1 + 16)/16 = 17/16$

Q:4 The correct answer is **Option 5** i.e. **4 : 9.**
A. $2x^2 + 3x - \sqrt[3]{19683} = 0$
$2x^2 + 3x - 27 = 0$
$2x^2 + 9x - 6x - 27 = 0$
$x(2x + 9) - 3(2x + 9) = 0$
$(x - 3)(2x + 9) = 0$
$x = 3, -9/2$
B. $3x^2 + 16x - \sqrt[3]{6859} = 0$
$3x^2 + 16x - 19 = 0$
$3x^2 + 19x - 3x - 19 = 0$
$x(3x + 19) -1(3x + 19) = 0$
$(x - 1)(3x + 19) = 0$
$x = 1, -19/3$
C. $4x^2 + 12x - \sqrt{256} = 0$
$4x^2 + 12x - 16 = 0$
$4x^2 + 16x - 4x - 16 = 0$
$4x(x + 4) - 4(x + 4) = 0$
$(4x - 4)(x + 4) = 0$
$x = 1, -4$
Now, according to the question,
The ratio of the square of the roots of equation A = $(3)^2 : (-9/2)^2 = 9 : 81/4 = 1 : 9/4 = 4 : 9$

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Q:5 The correct answer is **Option 3** i.e. **5 : 6.**

A. $2x^2 + 3x - \sqrt[3]{19683} = 0$

$2x^2 + 3x - 27 = 0$

$2x^2 + 9x - 6x - 27 = 0$

$x(2x + 9) - 3(2x + 9) = 0$

$(x - 3)(2x + 9) = 0$

$x = 3, -9/2$

B. $3x^2 + 16x - \sqrt[3]{6859} = 0$

$3x^2 + 16x - 19 = 0$

$3x^2 + 19x - 3x - 19 = 0$

$x(3x + 19) - 1(3x + 19) = 0$

$(x - 1)(3x + 19) = 0$

$x = 1, -19/3$

C. $4x^2 + 12x - \sqrt{256} = 0$

$4x^2 + 12x - 16 = 0$

$4x^2 + 16x - 4x - 16 = 0$

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

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

$x = 1, -4$

Now, according to the question,

2 is added to all positive roots then, the ratio between the Positive root of equation A to the sum of positive roots of equations 2 and 3

Ratio = $(3 + 2) : (1 + 2 + 1 + 2) = 5 : 6$

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