





**Banking** 

**WB** Police WB Civil Services Other Competitive Exams

**Date:** 13th Jan 2024

# Special Question - Quantitative Aptitude

English

Q:1 Directions: Three quadratic equations are as follows.

A. 
$$5x^2 + 11x - (4)^2 = 0$$

B. 
$$6x^2 + 28x + 23 = 0$$

C. 
$$2x^2 - 15x + 27 = 0$$

Find the difference between the roots of equation Α.

- **1.** 23/9
- **2.** 21/5
- **3.** 22/7
- **4.** 21/4
- **5.** 17/5

Q:2 Directions: Three quadratic equations are as

A. 
$$5x^2 + 11x - (4)^2 = 0$$

B. 
$$6x^2 + 28x + 23 = 0$$

C. 
$$2x^2 - 15x + 27 = 0$$

Find the sum of the roots of equation C.

- **1.** 7/3
- **2.** 15/7
- **3.** 14/3
- **4.** 15/2
- **5.** 17/3

Q:3 Directions: Three quadratic equations are as follows.

A. 
$$5x^2 + 11x - (4)^2 = 0$$

B. 
$$6x^2 + 28x + 23 = 0$$

C. 
$$2x^2 - 15x + 27 = 0$$

Find the value of 6 times the sum of roots of equation B.

- **1.** 27
- **2.** 27
- **3.** 29
- **4**. 25
- **5**. 29

Q:4 Directions: The roots of a quadratic equation are given:

17/8 and -1

If the quadratic equation derived from these given roots is divided by 2 and - 0.5x - 0.5 is added to it then, which root is common in both the equations?

- **1.** -1
- **2.** -2
- **3.** 1

**4.** 2

**5**. 1/2

Q:5 Directions: The roots of a quadratic equation are given:

17/8 and -1

Find the ratio of the positive roots of the equations.

- **1.** 12:17
- **2.** 17: 19
- **3.** 21: 23
- **4.** 15 : 17
- **5.** 17:18

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#### Answer Key

<b>1</b> . (2) <b>2</b> . (4)	<b>3</b> . (3)	<b>4</b> . (1)	<b>5.</b> (5)	
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#### Answers and Solutions

Q:1 The correct answer is Option 2 i.e. 21/5.

A. 
$$5x^2 + 11x - (4)^2 = 0$$
  
 $5x^2 + 11x - 16 = 0$   
 $5x^2 + 16x - 5x - 16 = 0$   
 $x(5x + 16) - 1(5x + 16) = 0$   
 $(x - 1)(5x + 16) = 0$   
 $x = 1, -16/5$   
B.  $6x^2 + 28x + 23 = 0$   
 $6x(x + 1) + 23(x + 1) = 0$   
 $(6x + 23)(x + 1) = 0$ 

$$x = -23/6, -1$$

C. 
$$2x^2 - 15x + 27 = 0$$

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

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

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

$$x = 9/2, 3$$

Now, according to the question

Roots of equation A = 1, -16/5

Difference = 1 - (-16/5) = 1 + 16/5 = (5 + 16)/5 =21/5

### Q:2 The correct answer is Option 4 i.e. 15/2.

A. 
$$5x^2 + 11x - (4)^2 = 0$$
  
 $5x^2 + 11x - 16 = 0$   
 $5x^2 + 16x - 5x - 16 = 0$   
 $x(5x + 16) - 1(5x + 16) = 0$   
 $(x - 1)(5x + 16) = 0$   
 $x = 1, -16/5$   
B.  $6x^2 + 28x + 23 = 0$   
 $6x^2 + 6x + 23x + 23 = 0$   
 $6x(x + 1) + 23(x + 1) = 0$   
 $(6x + 23)(x + 1) = 0$   
 $x = -23/6, -1$   
C.  $2x^2 - 15x + 27 = 0$   
 $2x(x - 3) - 9(x - 3) = 0$ 

Now, according to the question

Roots of equation 
$$C = 9/2, 3$$
  
Sum =  $9/2 + 3 = (9 + 6)/2 = 15/2$ 

Q:3 The correct answer is Option 3 i.e. -29.

A. 
$$5x^2 + 11x - (4)^2 = 0$$
  
 $5x^2 + 11x - 16 = 0$   
 $5x^2 + 16x - 5x - 16 = 0$   
 $x(5x + 16) - 1(5x + 16) = 0$   
 $(x - 1)(5x + 16) = 0$   
 $x = 1, -16/5$   
B.  $6x^2 + 28x + 23 = 0$   
 $6x^2 + 6x + 23x + 23 = 0$ 

$$6x(x + 1) + 23(x + 1) = 0$$

$$(6x + 23)(x + 1) = 0$$

$$x = -23/6, -1$$

C. 
$$2x^2 - 15x + 27 = 0$$
  
 $2x^2 - 6x - 9x + 27 = 0$   
 $2x(x - 3) - 9(x - 3) = 0$   
 $(2x - 9)(x - 3) = 0$ 

$$x = 9/2, 3$$

Now, according to the question

Sum of roots of equation B = (-23/6) + (-1) = -23/6 - 1 = (-23 - 6)/6 = -29/6

6 times of the sum =  $6 \times -29/6 = -29$ 

### Q:4 The correct answer is Option 1 i.e. -1.

The standard form of the equation is a - b + c = 0and.

b will be in the form of  $b_1/a$ ,  $b_2/a$ 

Thus, from the given roots i.e. 1/4 and 3/5quadratic equation will be

 $8x^2$  - 9x - 17 [you can recheck its roots by solving this quadratic equation]

Now, according to the question

This quadratic equation will be divided by 2 and -0.5x - 0.5 is added to it then, the newly formed quadratic equation will be

$$8/2x^2 - 9/2x - 17/2 = 0$$
  
 $4x^2 - 4.5x - 8.5 = 0$   
 $-0.5x - 0.5$  is added  
 $4x^2 - 5x - 9 = 0$   
 $4x^2 - 9x + 4x - 9 = 0$   
 $x(4x - 9) + 1(4x - 9) = 0$ 

$$(x+1)(4x-9) = 0$$

x = -1, 9/4

The common root in both the equations is -1

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

x = 9/2, 3





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**English** 

Q:5 The correct answer is Option 5 i.e. 17:18.

The standard form of the equation is a - b + c = 0and,

b will be in the form of  $b_1/a$ ,  $b_2/a$ 

Thus, from the given roots i.e. 1/4 and 3/5quadratic equation will be

 $8x^2 - 9x - 17$  [you can recheck its roots by solving this quadratic equation]

Now, according to the question

This quadratic equation will be divided by 2 and -0.5x - 0.5 is added to it then, the newly formed quadratic equation will be

$$8/2x^2 - 9/2x - 17/2 = 0$$

$$4x^2 - 4.5x - 8.5 = 0$$

$$4x^2 - 5x - 9 = 0$$

$$4x^2 - 9x + 4x - 9 = 0$$

$$x(4x-9)+1(4x-9)=0$$

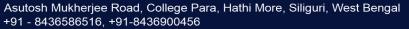
$$(x+1)(4x-9)=0$$

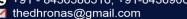
$$x = -1, 9/4$$

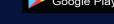
The ratio of positive roots = 17/8 : 9/4 = 17/8 : 18/8















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