Directions 1 - 3 : Three quadratic equations are as follows.

A. $3x^2 + 14x - 49 = 0$
B. $x^2 + 11x - 126 = 0$
C. $2x^2 + 5x - 25 = 0$

Q:1 If the positive roots of equations B and C are named m and n respectively and the positive root of equation C is named as l then, find the value of (nl + m).

1. 20.01
2. 19.45
3. 15.55
4. 19.83
5. 18.56

Q:2 Find the difference between the square of the negative roots of equation A and C.

1. 24
2. 26
3. 28
4. 20
5. 22

Q:3 Find the difference between the roots of equation B.

1. 28
2. 22
3. 25
4. 20
5. 24

Q:4 The roots of a quadratic equation are given:
15 and 12
Find the product of all positive roots of both the equations.

1. 520
2. 540
3. 500
4. 550
5. 560

Q:5 The roots of a quadratic equation are given:
15 and 12
If b and c in the quadratic equation is divided by 9, 1 is subtracted from b and −1 is added in c then, find the square of the negative root.
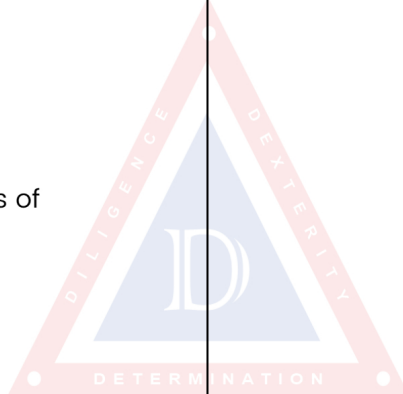
1. 1/9
2. 9
3. 1/4
4. 1
5. 4

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Asutosh Mukherjee Road, College Para, Hathi More, Siliguri, West Bengal
+91 - 8436586516, +91-8436900456
thedhronas@gmail.com
thedronas.com

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Answer Key

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

Answers and Solutions

Q:1 The correct answer is **Option 4** i.e. **19.83.**
A. $3x^2 + 14x - 49 = 0$
$3x^2 + 21x - 7x - 49 = 0$
$3x(x + 7) - 7(x + 7) = 0$
$(3x - 7)(x + 7) = 0$
$x = 7/3, -7$
B. $x^2 + 11x - 126 = 0$
$x^2 + 18x - 7x - 126 = 0$
$x(x + 18) - 7(x + 18) = 0$
$(x - 7)(x + 18) = 0$
$x = 7, -18$
C. $2x^2 + 5x - 25 = 0$
$2x^2 + 10x - 5x - 25 = 0$
$2x(x + 5) - 5(x + 5) = 0$
$(2x - 5)(x + 5) = 0$
$x = 5/2, -5$
Now, according to the question,
The positive roots of equations B and C are named m and n respectively and the positive root of equation C is named I then,
$m = 7/3, n = 7,$ and $I = 5/2$
The value of $(nI + m) = (7 \times 5/2 + 7/3) = (35/2 + 7/3) = (105 + 14)/6 = 119/6 = 19.83$

Q:2 The correct answer is **Option 1** i.e. **24.**
A. $3x^2 + 14x - 49 = 0$
$3x^2 + 21x - 7x - 49 = 0$
$3x(x + 7) - 7(x + 7) = 0$
$(3x - 7)(x + 7) = 0$
$x = 7/3, -7$
B. $x^2 + 11x - 126 = 0$
$x^2 + 18x - 7x - 126 = 0$
$x(x + 18) - 7(x + 18) = 0$
$(x - 7)(x + 18) = 0$
$x = 7, -18$
C. $2x^2 + 5x - 25 = 0$
$2x^2 + 10x - 5x - 25 = 0$
$2x(x + 5) - 5(x + 5) = 0$
$(2x - 5)(x + 5) = 0$
$x = 5/2, -5$

Now, according to the question,
Difference between the square of the negative roots of equation A and C
$(-7)^2 - (-5)^2 = 49 - 25 = 24$

Q:3 The correct answer is **Option 3** i.e. **25.**
A. $3x^2 + 14x - 49 = 0$
$3x^2 + 21x - 7x - 49 = 0$
$3x(x + 7) - 7(x + 7) = 0$
$(3x - 7)(x + 7) = 0$
$x = 7/3, -7$
B. $x^2 + 11x - 126 = 0$
$x^2 + 18x - 7x - 126 = 0$
$x(x + 18) - 7(x + 18) = 0$
$(x - 7)(x + 18) = 0$
$x = 7, -18$
C. $2x^2 + 5x - 25 = 0$
$2x^2 + 10x - 5x - 25 = 0$
$2x(x + 5) - 5(x + 5) = 0$
$(2x - 5)(x + 5) = 0$
$x = 5/2, -5$
Now, according to the question,
The difference between the roots of equation B = 7 - (-18) = 18 + 7 = 25

Q:4 The correct answer is **Option 2** i.e. **540.**
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. 15 and 12 quadratic equation will be
$x^2 - 27x + 180$ [you can recheck its roots by solving this quadratic equation]
Now, according to the question
If b and c in the quadratic equation is divided by 9, 1 is subtracted from b and -1 is added in c
$x^2 - 27/9x + 180/9 = 0$
$x^2 - 2x - 3 = 0$
$x^2 - 3x + x - 3 = 0$
$x(x - 3) + (x - 3) = 0$
$(x + 1)(x - 3) = 0$
$x = -1, 3$
Hence, the product of all positive roots of both equations = $15 \times 12 \times 3 = 45 \times 12 = 540$

Q:5 The correct answer is **Option 4** i.e. **1.**

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. 15 and 12 quadratic equation will be

$x^2 - 27x + 180$ [you can recheck its roots by solving this quadratic equation]

Now, according to the question

If b and c in the quadratic equation is divided by 9, 1 is subtracted from b and -1 is added in c

$x^2 - 27/9x + 180/9 = 0$

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

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

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

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

$x = -1, 3$

Hence, the square of the negative root $= (-1)^2 = 1$