

(EMC01-0001E)

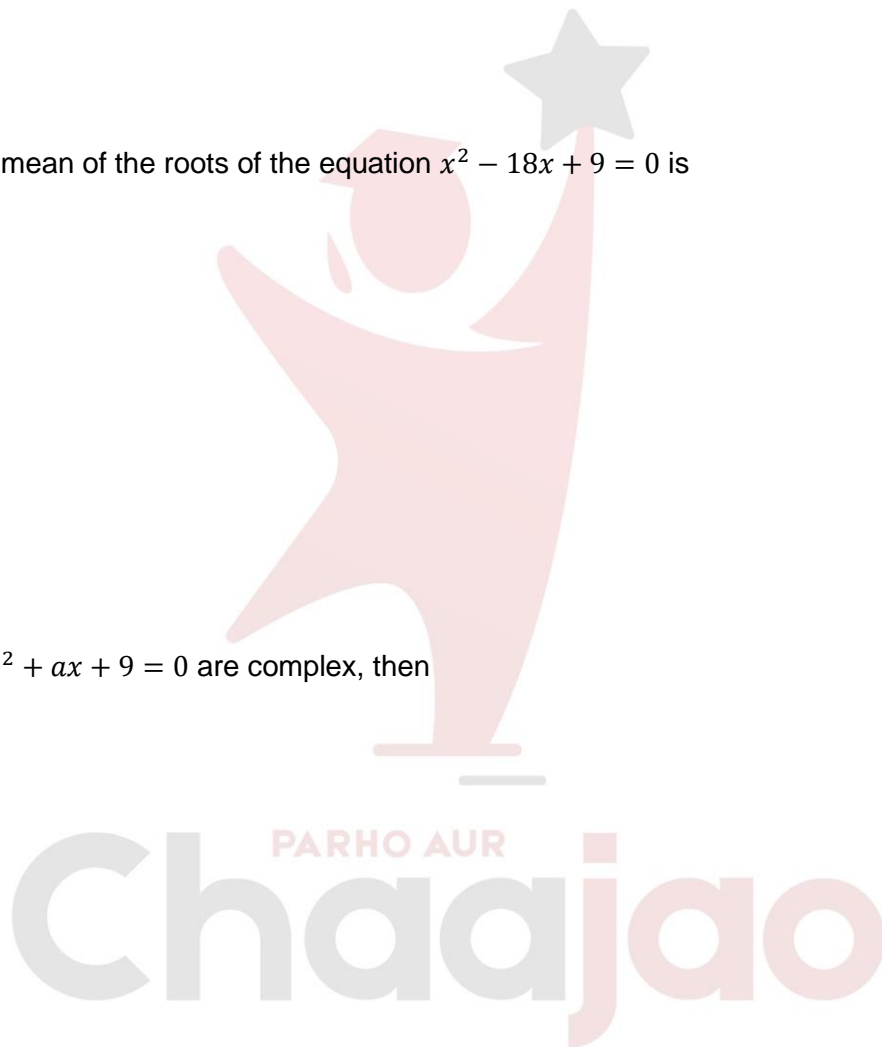
- If  $(x - a)$  is a factor of the polynomial  $x^6 - ax^5 + x^4 - ax^3 + 3x + a - 2$ , then the value of  $a$  is
  - 1
  - $\frac{1}{2}$
  - $\frac{1}{3}$
  - 2

(EMC01-0002M)

- The geometric mean of the roots of the equation  $x^2 - 18x + 9 = 0$  is
  - 3
  - $3\sqrt{2}$
  - 9
  - $9\sqrt{2}$

(EMC01-0003M)

- If the roots of  $x^2 + ax + 9 = 0$  are complex, then
  - $a < -6$
  - $a < 6$
  - $|a| < 6$
  - $|a| > 6$



EMC01-0004M)

- The value of  $k$  for which the quadratic equation  $x^2 - 2x(1 + 3k) + 7(2k + 3) = 0$  has equal roots, is
  - 1
  - 2
  - 3
  - 4

(EMC01-0005E)

- If the product of roots of the equation  $mx^2 + 6x + (2m - 1) = 0$  is  $-1$ , then the value of  $m$  is
  - 1
  - $-\frac{1}{3}$
  - $\frac{1}{3}$
  - 1

(EMC01-0006E)

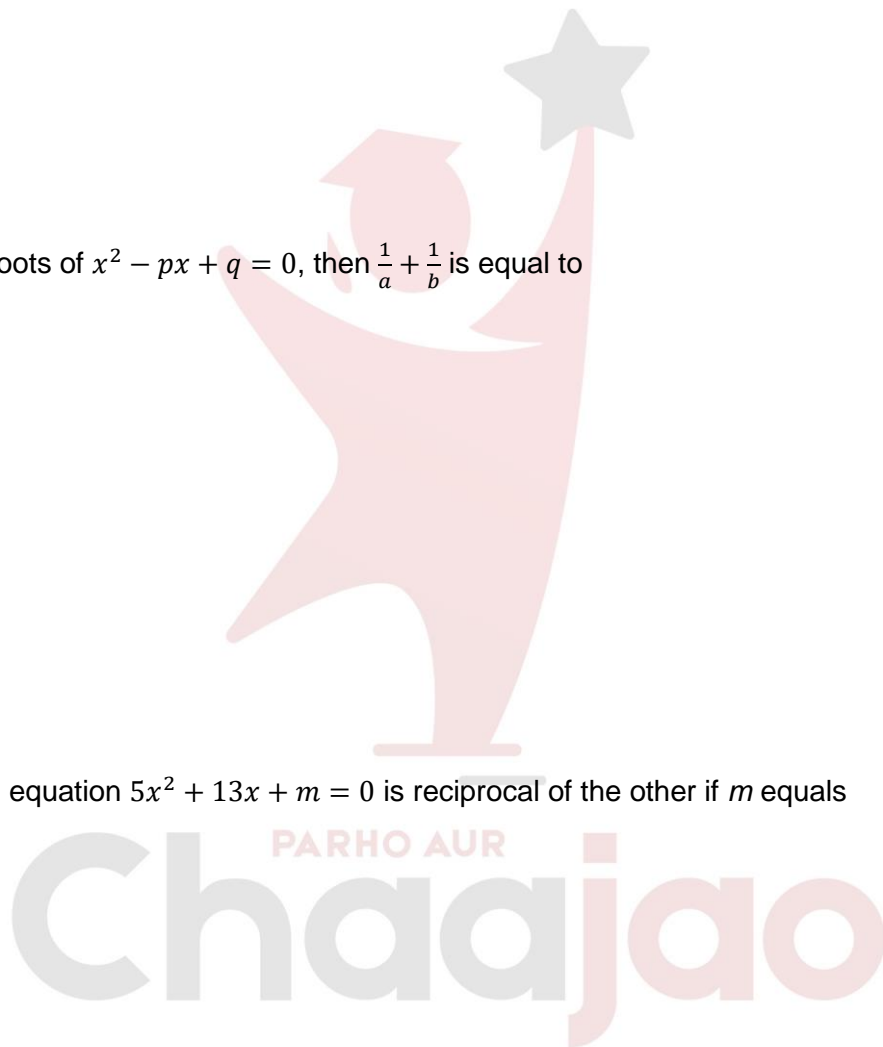
- If  $a$  and  $b$  are roots of  $x^2 - px + q = 0$ , then  $\frac{1}{a} + \frac{1}{b}$  is equal to
  - $\frac{-p}{q}$
  - $\frac{1}{2p}$
  - $\frac{-1}{q}$
  - $\frac{p}{q}$

(EMC01-0007M)

- One root of the equation  $5x^2 + 13x + m = 0$  is reciprocal of the other if  $m$  equals
  - 0
  - 5
  - $\frac{1}{6}$
  - 6

(EMC01-0008M)

- If  $1 - i$  is a root of the equation  $x^2 + ax + b = 0$ , then  $b$  is equal to
  - 2
  - 1
  - 1
  - 2



(EMC01-0009E)

- If  $\alpha$  and  $\beta$  are the roots of  $4x^2 + 3x + 7 = 0$ , then the value of  $\frac{1}{\alpha} + \frac{1}{\beta}$  is

- A)  $-\frac{3}{7}$
- B)  $-\frac{3}{4}$
- C)  $\frac{3}{7}$
- D)  $\frac{4}{7}$

(EMC01-0010H)

- If  $\alpha$  and  $\beta$  are the roots of the equation  $x^2 + 2x + 4 = 0$ , then  $\frac{1}{\alpha^3} + \frac{1}{\beta^3}$  is equal to

- A)  $-\frac{1}{2}$
- B)  $\frac{1}{2}$
- C)  $\frac{1}{4}$
- D)  $\frac{1}{6}$

(EMC01-0011H)

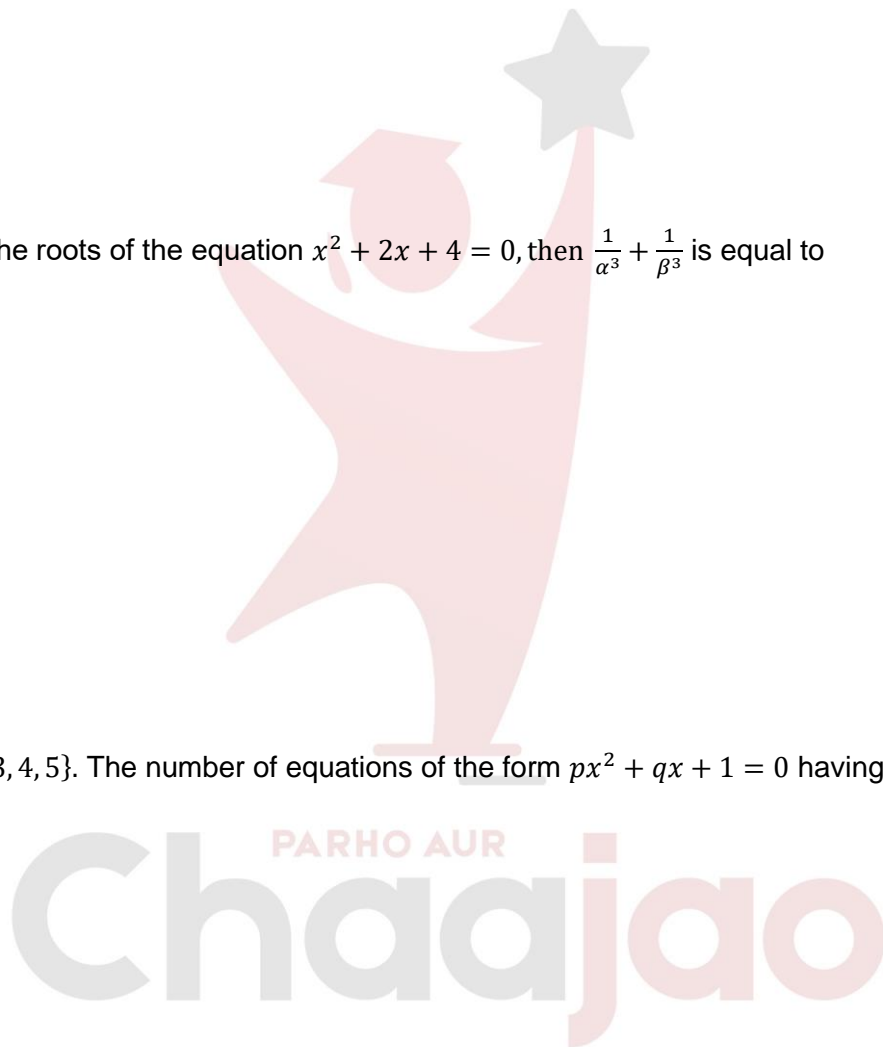
- Let  $p, q \in \{1, 2, 3, 4, 5\}$ . The number of equations of the form  $px^2 + qx + 1 = 0$  having real roots, is

- A) 7
- B) 8
- C) 9
- D) 12

(EMC01-0012M)

- If the difference of the roots of the equation  $x^2 + px + 8 = 0$  is 2, then  $p$  equals

- A)  $\pm 2$
- B)  $-6, 2$
- C)  $-2, 6$
- D)  $\pm 6$



(EMC01-0013M)

- If one root of the equation  $x^2 + px + q = 0$  is  $2 + \sqrt{3}$ , then the values of  $p$  and  $q$  are
  - A)  $-2, -\sqrt{3}$
  - B)  $-4, 1$
  - C)  $2, \sqrt{3}$
  - D)  $4, -1$

(EMC01-0014M)

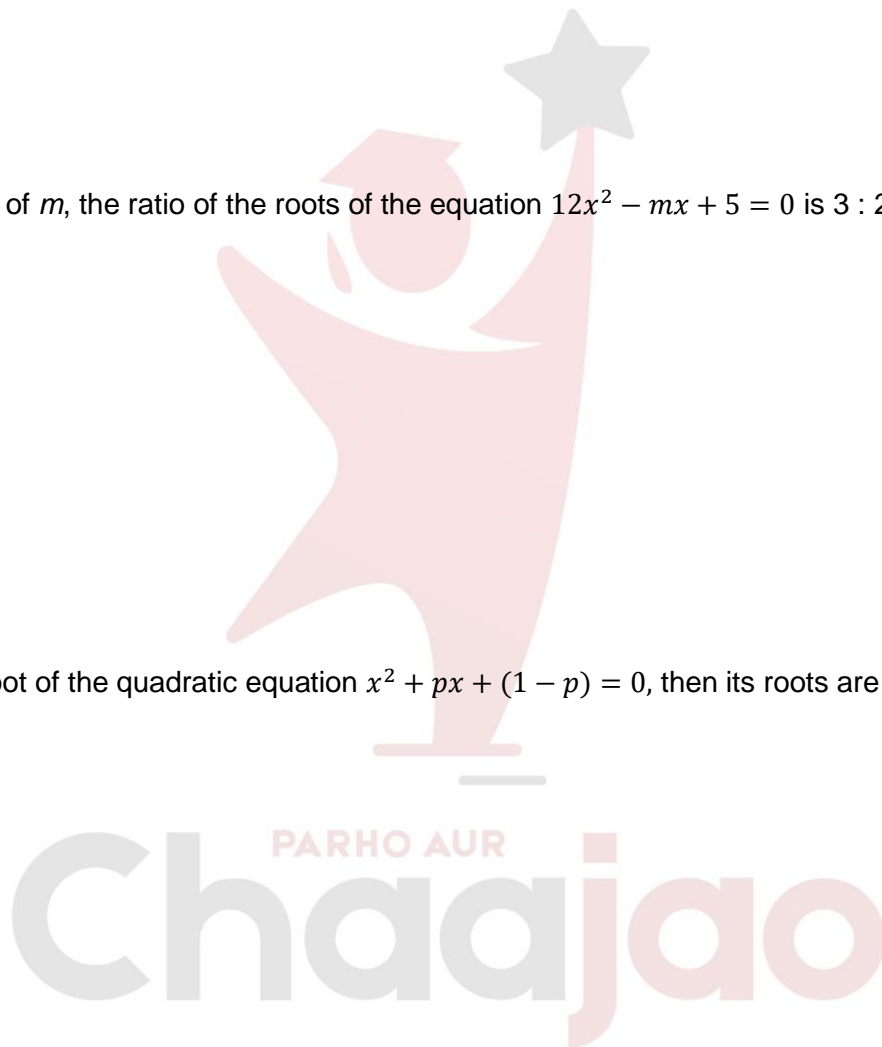
- For what value of  $m$ , the ratio of the roots of the equation  $12x^2 - mx + 5 = 0$  is  $3 : 2$ ?
  - A)  $5\sqrt{10}$
  - B)  $10\sqrt{5}$
  - C)  $25\sqrt{2}$
  - D)  $15\sqrt{5}$

(EMC01-0015M)

- If  $(1 - p)$  is a root of the quadratic equation  $x^2 + px + (1 - p) = 0$ , then its roots are
  - A)  $-1, 2$
  - B)  $-1, 0$
  - C)  $-1, 1$
  - D)  $0, 1$

(EMC01-0016H)

- The roots of equation  $2^{2x} - 10 \cdot 2^x + 16 = 0$  are
  - A)  $1, 3$
  - B)  $1, 8$
  - C)  $2, 3$
  - D)  $2, 8$



(EMC01-0017M)

- The solution set of  $\sqrt{2x-6} + \sqrt{x+4} = 5$  is
  - {5}
  - {0, 5}
  - {1, 3}
  - {3, 5}

(EMC01-0018E)

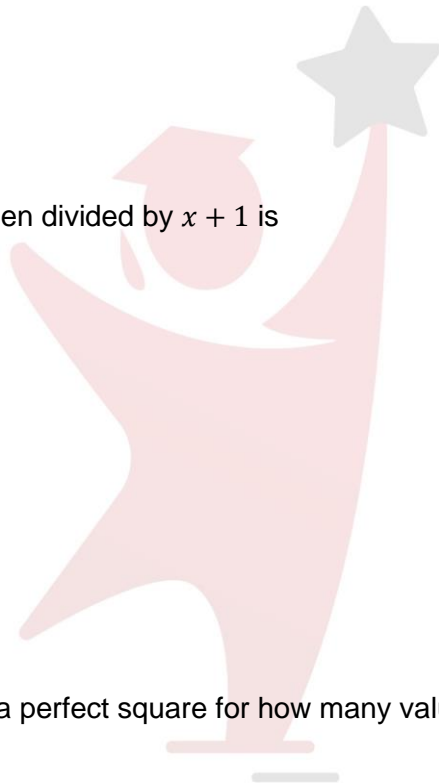
- Remainder of  $x^{64} + x^{27} + 1$  when divided by  $x + 1$  is
  - 0
  - 1
  - 2
  - 3

(EMC01-0019M)

- $x^2 + x + 1 + 2k(x^2 - x - 1)$  is a perfect square for how many values of  $k$ ?
  - 0
  - 1
  - 2
  - 3

(EMC01-0020E)

- Both the roots of the equation  $x^2 - x - 3 = 0$  are
  - real and rational
  - real and irrational
  - real and equal
  - imaginary roots



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(EMC01-0021E)

- The value of  $a$  for which the equation  $2x^2 + 2\sqrt{6}x + a = 0$  has equal roots, is
  - $\sqrt{2}$
  - $\sqrt{3}$
  - 2
  - 3

(EMC01-0022M)

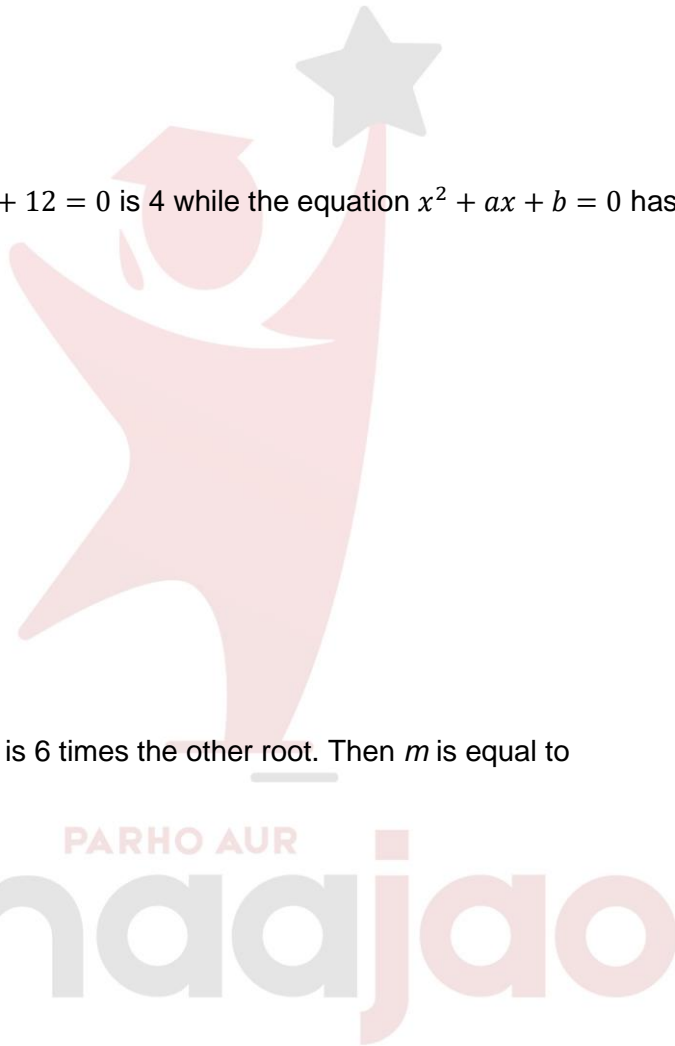
- If one root of equation  $x^2 + ax + 12 = 0$  is 4 while the equation  $x^2 + ax + b = 0$  has equal roots, then the value of  $b$  is
  - $\frac{4}{7}$
  - $\frac{7}{4}$
  - $\frac{4}{49}$
  - $\frac{49}{4}$

(EMC01-0023H)

- One root of  $mx^2 - 14x + 8 = 0$  is 6 times the other root. Then  $m$  is equal to
  - 1
  - 2
  - 3
  - None of these

(EMC01-0024M)

- If  $\alpha + \beta = 4$  and  $\alpha^3 + \beta^3 = 44$ , then  $\alpha, \beta$  are the roots of the equation
  - $2x^2 - 7x + 6 = 0$
  - $3x^2 - 12x + 5 = 0$
  - $4x^2 + 22x + 15 = 0$
  - $9x^2 - 27x + 20 = 0$



(EMC01-0025M)

- If  $\{\alpha, \beta\}$  is the solution set of  $2x^2 - 3x + 5 = 0$ , then the equation with solution set  $\{\alpha^2 + 1, \beta^2 + 1\}$  is
  - A)  $4x^2 - 3x - 18 = 0$
  - B)  $4x^2 - 3x + 18 = 0$
  - C)  $4x^2 - 3x + 18 = 0$
  - D)  $4x^2 + 3x + 18 = 0$



Answers Key	
1	B
2	A
3	C
4	B
5	C
6	D
7	B
8	D
9	A
10	C
11	D
12	D
13	B
14	A
15	B
16	A
17	A
18	B
19	C
20	B
21	D
22	D
23	C
24	B
25	D