A2.A.20: Roots of Quadratics 1: Determine the sum and product of the roots of a quadratic equation by examining its coefficients

1 Given the equation $x^2 + 3x - 9 = 0$. What is the product of the roots?
1) 9
2) –9
3) 3
4) –3

2 What is the product of the roots of the equation $-2x^2 + 3x + 8 = 0$?
1) $\frac{3}{2}$
2) –4
3) $\frac{3}{4}$
4) 4

3 What is the product of the roots of the equation $2x^2 - 9x + 6 = 0$?
1) $\frac{9}{2}$
2) $-\frac{9}{2}$
3) 3
4) $\frac{1}{3}$

4 What is the product of the roots of the equation $2x^2 - x - 2 = 0$?
1) 1
2) 2
3) –1
4) –2

5 What is the product of the roots of $4x^2 - 5x = 3$?
1) $\frac{3}{4}$
2) $\frac{5}{4}$
3) $-\frac{3}{4}$
4) $-\frac{5}{4}$

6 What is the product of the roots of the quadratic equation $2x^2 - 7x = 5$?
1) 5
2) $\frac{5}{2}$
3) –5
4) $-\frac{5}{2}$

7 What is the sum of the roots of the equation $2x^2 - 3x + 4 = 0$?
1) $\frac{3}{2}$
2) 2
3) $\frac{2}{3}$
4) $\frac{1}{2}$

8 What is the sum of the roots of the equation $2x^2 - 13x + 17 = 0$?

1) $-\frac{13}{2}$
2) $\frac{13}{2}$
3) $-\frac{17}{2}$
4) $\frac{17}{2}$

9 What is the sum of the roots of the equation $2x^2 + 6x - 7 = 0$?

1) $-\frac{7}{2}$
2) -3
3) 3
4) $\frac{7}{2}$

10 What is the sum of the roots of the equation $3x^2 - 2x + 5 = 0$?

1) $-\frac{2}{3}$
2) $\frac{2}{3}$
3) $-\frac{5}{3}$
4) $\frac{5}{3}$

11 What is the sum of the roots of the equation $2x^2 - 3x + 9 = 0$?

1) $\frac{2}{3}$
2) $\frac{9}{2}$
3) $\frac{3}{2}$
4) $-\frac{3}{2}$

12 What is the sum of the roots of the equation $-3x^2 + 6x - 2 = 0$?

1) $\frac{2}{3}$
2) 2
3) $-\frac{2}{3}$
4) -2

13 Find the sum of the roots of the equation $x^2 + 7x - 8 = 0$.

14 What are the sum and product of the roots of the equation $6x^2 - 4x - 12 = 0$?

1) sum $= -\frac{2}{3}$; product $= -2$
2) sum $= \frac{2}{3}$; product $= -2$
3) sum $= -2$; product $= \frac{2}{3}$
4) sum $= -2$; product $= -\frac{2}{3}$

15 What are the sum (S) and product (P) of the roots of the equation $2x^2 - 4x + 1 = 0$?

1) $S = \frac{1}{2}, P = 2$
2) $S = 2, P = \frac{1}{2}$
3) $S = -2, P = \frac{1}{2}$
4) $S = -4, P = 1$

16 What are the sum (S) and product (P) of the roots of the equation $3x^2 - 7x + 12 = 0$?

1) $S = 7, P = 12$
2) $S = \frac{7}{3}, P = -4$
3) $S = \frac{7}{3}, P = 4$
4) $S = -\frac{7}{3}, P = -4$

17 Which statement about the equation $3x^2 + 9x - 12 = 0$ is true?

1) The product of the roots is −12.
2) The product of the roots is −4.
3) The sum of the roots is 3.
4) The sum of the roots is −9.

18 Find the sum and product of the roots of the equation $5x^2 + 11x - 3 = 0$.

19 Determine the sum and the product of the roots of the equation $12x^2 + x - 6 = 0$.

20 Determine the sum and the product of the roots of $3x^2 = 11x - 6$.

21 Given the equation $3x^2 + 2x + k = 0$, state the sum and product of the roots.

22 If the sum of the roots of $x^2 + 3x - 5$ is added to the product of its roots, the result is

1) 15
2) −15
3) −2
4) −8

23 If the sum of the roots of the equation $2x^2 - 5x - 3 = 0$ is added to the product of the roots, the result is

1) 1
2) $-\frac{1}{4}$
3) −1
4) 4

24 In the equation $x^2 - 7x + 2 = 0$, the sum of the roots exceeds the product of the roots by

1) 9
2) 5
3) −9
4) −5

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Answer Section

1 ANS: 2 REF: 088730siii
2 ANS: 2 REF: 068733siii
3 ANS: 3 REF: 019523siii
4 ANS: 3 REF: 019726siii
5 ANS: 3
$\frac{c}{a} = \frac{-3}{4}$

REF: 011517a2
6 ANS: 4
$2x^2 - 7x - 5 = 0$

$\frac{c}{a} = \frac{-5}{2}$

REF: 061414a2
7 ANS: 1 REF: 019424siii
8 ANS: 2 REF: 010429siii
9 ANS: 2 REF: 069635siii
10 ANS: 2 REF: 080129siii
11 ANS: 3 REF: 089418siii
12 ANS: 2
$\frac{-b}{a} = \frac{-6}{-3} = 2$

REF: 011613a2
13 ANS:
-7

REF: 080210siii
14 ANS: 2
sum: $\frac{-b}{a} = \frac{4}{6} = \frac{2}{3}$. product: $\frac{c}{a} = \frac{-12}{6} = -2$

REF: 011209a2
15 ANS: 2 REF: 069833siii
16 ANS: 3 REF: 060133siii
17 ANS: 2
$P = \frac{c}{a} = \frac{-12}{3} = -4$

REF: 081506a2

18 ANS:

Sum $\frac{-b}{a} = -\frac{11}{5}$. Product $\frac{c}{a} = -\frac{3}{5}$

REF: 061030a2

19 ANS:

Sum $\frac{-b}{a} = -\frac{1}{12}$. Product $\frac{c}{a} = -\frac{1}{2}$

REF: 061328a2

20 ANS:

$3x^2 - 11x + 6 = 0$. Sum $\frac{-b}{a} = \frac{11}{3}$. Product $\frac{c}{a} = \frac{6}{3} = 2$

REF: 011329a2

21 ANS:

Sum $\frac{-b}{a} = \frac{-2}{3}$. Product $\frac{c}{a} = \frac{k}{3}$

REF: 061534a2

22 ANS: 4 REF: 080217b

23 ANS: 1 REF: 069034siii

24 ANS: 2 REF: 060030siii