



MATHS

BOOKS - SELINA MATHS (ENGLISH)

FACTORISATION

MCQ

1. The remainder when $f(x) = x^2 - 5x + 8$ is divided by $x - 1$, is

- A. 4
- B. 5
- C. 8
- D. 14

Answer: A



2. Find the remainder obtained on dividing $f(x) = 6x^3 - 3x^2 - 8x + 7$ by $x - 2$

A. -37

B. -27

C. 27

D. 37

Answer: C



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3. The remainder when $f(x) = x^2 - 4x + 2$ is divided by $2x + 1$ is

A. $\frac{1}{4}$

B. $\frac{17}{4}$

C. -10

D. 22

Answer: B



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4. Find the remainder when $2x^3 - 7x^2 + 5x - 9$ is divided by $2x - 3$

A. $-\frac{21}{2}$

B. $-\frac{21}{4}$

C. $-\frac{129}{4}$

D. $-\frac{129}{2}$

Answer: A



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5. The value of the polynomial $3x^2 + 5x - 2$ at $x = -3$ is

A. 38

B. 24

C. 12

D. 8

Answer: D



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6. The value of the polynomial $3x^2 + 7x^2 + 11x - 1$ at $x = 1$ is

A. 8

B. 20

C. -20

D. -8

Answer: B



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7. The remainder on dividing $3x^2 - 5x + 11$ by $2x + 5$ is

A. 36

B. $\frac{69}{4}$

C. $\frac{169}{4}$

D. 27

Answer: C



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8. The remainder on dividing $2x^3 + 6x^3 - 17x - 4$ by $2x + 1$ is

A. $-\frac{17}{4}$

B. $\frac{23}{4}$

C. $-\frac{43}{4}$

D. $\frac{15}{4}$

Answer: B



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9. If the sum of remainders obtained on dividing $x^3 + (kx + 8)x + k$ by $x + 1$ and $x - 2$ is 1 then the value of k is :

A. 2

B. 1

C. -1

D. -2

Answer: D



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10. if $(x - 2)$ is a factor of $2x^3 - x^2 - px - 2$ then the value of p is

A. 5

B. 4

C. 10

D. 8

Answer: A



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11. If both $(x - 2)$ and $\left(x - \frac{1}{2}\right)$ are the factors of $px^2 + 5x + r$ then

A. $p=r$

B. $p=2r$

C. $2p=r$

D. $p=r+2$

Answer: A



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12. If $(x - a)$ is a factor of the polynomial $p(x) = x^3 - ax^2 + 2x + 2$ then the value of a is

A. 1

B. -1

C. 2

D. -2

Answer: B



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13. If $x - 2$ is a factor of $x^3 + 2x^2 - kx + 10$ then the value of k is

A. 3

B. 8

C. 13

D. 26

Answer: C



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14. If both $(x - 2)$ and $(x + 3)$ are the factors of the expression $x^3 + ax^2 + bx - 12$ then the value of $(a + b)$ is

A. 12

B. -1

C. 7

D. -6

Answer: B

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15. Given that $(x + 2)$ and $(x + 4)$ are the factors of $3x^3 + ax^2 - 6x - b$.

The values of a and b respectively are

A. 4,2

B. 2,4

C. 40,13

D. 13,40

Answer: D

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16. Given that $2x + 7$ is a factor of the expression $2x^3 + 5x^2 - 11x - 14$.

The other factors of the expression are

A. $(x+1), (x+2)$

B. $(x+1), (x-2)$

C. $(x-1), (x+1)$

D. $(x-1), (x-2)$

Answer: C



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17. What number should be added to the polynomial $2x^3 - 3x^2 - 8x$ is that the resulting polynomial leaves the remainder 12 when divided by $2x + 1$?

A. 3

B. 6

C. 9

D. 12

Answer: C

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18. If the polynomials $kr^3 - 7x^2 + 7x - 2$ and $x^3 - 2kx^2 + 8x - 8$ leave the same remainder when divided by $x-2$, then the value of k is:

A. -1

B. 1

C. -2

D. 2

Answer: D

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19. If on dividing the polynomial $2x^3 + kx^2 - (5x - 3)x + 8$ by $x + 2$ the remainder is 30 then the value of k is

A. 8

B. 9

C. 10

D. 11

Answer: D



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20. What number should be added to the polynomial $p(x) = 2x^3 - 3x^2 - 8x$ so that it leaves a remainder 10 when divided by $2x + 1$?

A. 3

B. 7

C. 10

D. 13

Answer: B

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21. $x - 2$ is a factor of the expression $x^3 + ax^2 + bx + 6$. When the expression is divided by $(x - 3)$, it leaves a remainder 3. Then the values of a and b respectively are:

A. $-4, 1$

B. $1, 4$

C. $-1, 4$

D. $4, -1$

Answer: A

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22. When the polynomial $x^3 + 2x^2 - kx + 4$ is divided by $x - 2$ the remainder is k . The value of k is

A. -10

B. $-\frac{20}{3}$

C. $\frac{20}{3}$

D. 20

Answer: C

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23. The factors of the polynomial $3x^2 - 5x - 2$ are

A. $(3x-1),(x+2)$

B. $(3x+1),(x+2)$

C. $(3x-1),(x+2)$

D. $(3x+1),(x-2)$

Answer: B

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24. The factors of the polynomial $2x^3 - x^2 - 2x + 1$ are

- A. $(x-1), (x+1), (2x-1)$
- B. $(x - 1)^2, (2x - 1)$
- C. $(x - 1)^2, (2x + 1)$
- D. $(x-1), (x+1), (2x+1)$

Answer: A



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25. The other factors of the polynomial $2x^3 - x^2 - 5x - 2$ if one of its factor is $(x - 2)$ are

- A. $(x+1), (2x-1)$
- B. $(x-1), (2x-1)$
- C. $(x+1), (2x+1)$

D. $(x-1), (2x+1)$

Answer: C



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26. If $(3x + 2)$ is a factor of the polynomial $2x^3 + 2x^2 - 3x - 2$, then its other factors are

A. $(x+1), (x+2)$

B. $(x-1), (x+1)$

C. $(x-1), (x-3)$

D. $(x-2), (x-3)$

Answer: B



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27. Using the remainder theorem the factors of the polynomial

$$x^3 + x^2 - 4x - 4 \text{ are}$$

A. $(x+1), (x-2), (x-2)$

B. $(x-1), (x+1), (x+2)$

C. $(x+1), (x+1), (x-2)$

D. $(x+1), (x+2), (x-2)$

Answer: D



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28. The possible values of x for which the value of the polynomial

$$f(x) = 3x^3 + 2x^2 - 19x + 6 \text{ is zero are}$$

A. $-3, 2, \frac{1}{3}$

B. $3, -2, \frac{1}{3}$

C. $3, 2, \frac{1}{3}$

D. $-3, -2, \frac{1}{3}$

Answer: A



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29. Using remainder theorem, the factors of the polynomial $2x^3 + 3x^2 - 9x - 10$ are

A. $(x-2), (x-3), (2x+5)$

B. $(x-2), (x+1), (2x+5)$

C. $(x-2), (x-1), (2x-9)$

D. $(x-2), (x+4), (2x-9)$

Answer: B



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30. A polynomial of degree 2 is called :

- A. Linear polynomial
- B. Quadratic polynomial
- C. Cubic polynomial
- D. Zero polynomial

Answer: B



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31. The degree of zero polynomial is:

- A. 0
- B. 1
- C. 2
- D. Not defined

Answer: D



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32. Which of the following is not a monomial?

A. $5xy$

B. $2x$

C. $2y^2$

D. $2x+4y$

Answer: D



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33. The division algorithm for a polynomial is:

A. $\text{Dividend} = \text{Divisor} + \text{Remainder} + \text{Quotient}$

B. $\text{Dividend} = \text{Divisor} \times \text{Quotient} - \text{Remainder}$

C. $\text{Dividend} = \text{Divisor} \times \text{Quotient} + \text{Remainder}$

D. $\text{Dividend} = \text{Quotient} \times \text{Remainder} + \text{Divisor}$

Answer: C

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34. Which of the following relation is correct?

A. Degree of remainder \geq Degree of divisor

B. Degree of remainder $>$ degree of divisor

C. Degree of remainder \leq degree of divisor

D. Degree of remainder $<$ degree of divisor

Answer: D

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35. If $(x - a)$ is a factor of the polynomial $f(x)$ then

A. $f(a)=0$

B. $f(-a)=0$

C. $f(a) \neq 0$

D. None of these

Answer: A



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M C Q Fill In The Blanks

1. If $(x - 2)$ and $(x + 3)$ are the factors of the polynomial

$f(x) = x^3 + ax + b$ then the value of a is

A. -19

B. -30

C. 19

D. 30

Answer: A



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2. The factors of the polynomial $x^2 - 2x - 8$ areare

A. $(x-2),(x-4)$

B. $(x+2),(x-4)$

C. $(x+2),(x+4)$

D. $(x-2),(x+4)$

Answer: B



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3. If on dividing $2x^3 + 3x^2 - kx + 5$ by $x - 2$ we get a remainder 7, then the value of k is

A. 13

B. -13

C. 26

D. -26

Answer: A



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4. If the polynomial $ax^3 + 3x^2 - 9$ and $2x^3 + 4x + a$ leaves the same remainder when divided by $x + 3$ then the value of a is

A. 3

B. -3

C. 6

D. -6

Answer: A



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5. The factors of the polynomial $3x^3 + 2x^2 - 19x + 6$ are

A. $(x-2)(x-3)$

B. $(x+2)(x+2)$

C. $(x-2)(x+3)(3x-2)$

D. $(x+3)(x-2)$

Answer: C



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6. If $(x - 3)$ is a factor of $x^2 + x - a$ then the value of a is

A. -12

B. 12

C. 6

D. -6

Answer: B



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7. The factors of the polynomial $x^3 + 10x^2 - 37x + 26$ are

A. $(x-1)(x-2)(x+13)$

B. $(x+1)(x+2)(x+13)$

C. $(x-1)(x+2)(x+3)$

D. $(x+1)(x-2)(x-13)$

Answer: A



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M C Q Assertion And Reason Based Questions

1. Assertion : The factors of the polynomial $x^2 - 3x - m(m + 3)$ are $(x + m)$ and $(x - (m + 3))$

Reason : The factors of a polynomial $x^2 - (a + b)x + ab$ are $(x - a)$ and $(x - b)$

- A. Both assertion and reason are correct and reason is the correct explanation of assertion
- B. Both assertion and reason are correct but reason is not the correct explanation of assertion
- C. Assertion is correct but reason is incorrect
- D. Assertion is incorrect but reason is correct

Answer: A



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2. Assertion : $2x^3 + 3x^2 - 4x + 2$ is a polynomial of degree 2 ?

Reason : The highest power of the variable x in a given polynomial is the degree of the polynomial

- A. Both assertion and reason are correct and reason is the correct explanation of assertion
- B. Both assertion and reason are correct but reason is not the correct explanation of assertion
- C. Assertion is correct but reason is incorrect
- D. Assertion is incorrect but reason is correct

Answer: B



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3. Assertion : The number of factors of the polynomial $3x^3 - 5x^2 + 1$ is 3

Reason : The number of factors of a polynomial is equal to the number of

terms in the polynomial

- A. Both assertion and reason are correct and reason is the correct explanation of assertion
- B. Both assertion and reason are correct but reason is not the correct explanation of assertion
- C. Assertion is correct but reason is incorrect
- D. Assertion is incorrect but reason is correct

Answer: C



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4. Assertion : If $x = 2$ and $x = -3$ satisfies the polynomial $x^2 + (a + 1)x + b$ completely, then the values of a and b are 0 and -6 respectively

Reason : If $x = a$ satisfies a polynomial $f(x)$ completely, then $f(a) = 0$

- A. Both assertion and reason are correct and reason is the correct explanation of assertion
- B. Both assertion and reason are correct but reason is not the correct explanation of assertion
- C. Assertion is correct but reason is incorrect
- D. Assertion is incorrect but reason is correct

Answer: A

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5. Assertion : Degree of a zero polynomial is not defined

Reason : Degree of a non-zero constant polynomial is 0

- A. Both assertion and reason are correct and reason is the correct explanation of assertion

B. Both assertion and reason are correct but reason is not the correct explanation of assertion

C. Assertion is correct but reason is incorrect

D. Assertion is incorrect but reason is correct

Answer: B

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M C Q Competency Based Questions

1. A teacher wrote the following polynomial on the board :

$$2x^3 - 3x^2 + 4x + 7, x^3 - 19x - 30, 2x^2 + 5x + 2, 3x + 2, 4x^2, 2x^2 - 5x + 7$$

Now she asked following questions to the students

Which of the following is a cubic polynomial ?

A. $2x^3 - 3x^2 + 4x + 7$

B. $2x^2 + 5x + 2$

C. $3x + 2$

D. $4x^2$

Answer: A



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2. A teacher wrote the following polynomial on the board :

$$2x^3 - 3x^2 + 4x + 7, x^3 - 19x - 30, 2x^2 + 5x + 2, 3x + 2, 4x^2, 2x^2 - 5x +$$

Now she asked following questions to the students

Which of the following is a binomial

A. $4x^2$

B. $3x+2$

C. $2x^2 - 5x + p$

D. $2x^2 + 5x + q$

Answer: B



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3. A teacher wrote the following polynomial on the board :

$$2x^3 - 3x^2 + 4x + 7, x^3 - 19x - 30, 2x^2 + 5x + 2, 3x + 2, 4x^2, 2x^2 - 5x +$$

Now she asked following questions to the students

When the polynomial $2x^3 - 3x^2 + 4x + 7$ is divided by $x - 2$ the remainder is

A. 19

B. 10

C. -29

D. 2

Answer: A

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4. A teacher wrote the following polynomial on the board :

$$2x^3 - 3x^2 + 4x + 7, x^3 - 19x - 30, 2x^2 + 5x + 2, 3x + 2, 4x^2, 2x^2 - 5x +$$

Now she asked following questions to the students

If $2x + 1$ is a factors of $2x^2 - 5x + p$ then the value of p is

A. 3

B. 6

C. -6

D. -3

Answer: D



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5. A teacher wrote the following polynomial on the board :

$$2x^3 - 3x^2 + 4x + 7, x^3 - 19x - 30, 2x^2 + 5x + 2, 3x + 2, 4x^2, 2x^2 - 5x +$$

Now she asked following questions to the students

If $2x + 1$ is a factor of the polynomial $2x^2 + 5x + q$ then the value of q is

A. 3

B. 7

C. 2

D. -3

Answer: C



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6. Underground water sump is popular in India. It is usually used for large water sump storage and can be built cheaply using cement-like materials. Underground water sumps are typically chosen by people who want to save space. The water in the underground sump is not affected by extreme weather conditions.

A builder wants to build a sump to store water in an apartment. The volume of the rectangular sump will be modelled by the polynomial

$$V(x) = x^3 - 7x^2 + 14x - 8$$

If he planned in such a way that the sump is $(x-1)$ units deep. Then the base dimensions of the sump are:

A. $(x+2) \times (x+4)$

B. $(x+2) \times (x-4)$

C. $(x-2) \times (x+4)$

D. $(x-2) \times (x-4)$

Answer: D



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7. Underground water sump is popular in India. It is usually used for large water sump storage and can be built cheaply using cement-like materials. Underground water sumps are typically chosen by people who want to save space. The water in the underground sump is not affected by extreme weather conditions.

A builder wants to build a sump to store water in an apartment. The volume of the rectangular sump will be modelled by the polynomial

$$V(x) = x^3 - 7x^2 + 14x - 8$$

If $x=5$ units, then the volume of the sump is:

A. 12 cu. Units

B. 14 cu. Units

C. 16 cu.units

D. 18 cu. Units

Answer: A



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8. Underground water sump is popular in India. It is usually used for large water sump storage and can be built cheaply using cement-like materials.

Underground water sumps are typically chosen by people who want to save space. The water in the underground sump is not affected by extreme weather conditions.

A builder wants to build a sump to store water in an apartment. The volume of the rectangular sump will be modelled by the polynomial

$$V(x) = x^3 - 7x^2 + 14x - 8$$

If $x = 5$ and the builder wants to paint the inner portion (excluding the roof), then what is the total area to be painted?

A. 16 sq. units

B. 32 sq. units

C. 49 sq. units

D. 35 sq. units

Answer: B



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9. Underground water sump is popular in India. It is usually used for large water sump storage and can be built cheaply using cement-like materials. Underground water sumps are typically chosen by people who want to save space. The water in the underground sump is not affected by extreme weather conditions.

A builder wants to build a sump to store water in an apartment. The

volume of the rectangular sump will be modelled by the polynomial

$$V(x) = x^3 - 7x^2 + 14x - 8$$

What is the total cost of painting, if the rate is Rs.10 per square unit?

A. Rs. 160

B. Rs. 350

C. Rs. 490

D. Rs. 320

Answer: B



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10. Underground water sump is popular in India. It is usually used for large water sump storage and can be built cheaply using cement-like materials. Underground water sumps are typically chosen by people who want to save space. The water in the underground sump is not affected by extreme weather conditions.

A builder wants to build a sump to store water in an apartment. The

volume of the rectangular sump will be modelled by the polynomial

$$V(x) = x^3 - 7x^2 + 14x - 8$$

The factors of the polynomial $x^2 + 3x - 18$ are

A. $(x+3), (x+6)$

B. $(x-3), (x+6)$

C. $(x-3), (x-6)$

D. $(x-3), (x-6)$

Answer: B



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11. Government of India allocated some funds for the refugees who came from Afghanistan for their welfare. The fund is to be equally divided between each of the families. If the funds allocated are represented by $6x^2 + 17x^2 + 4x - 12$ and each family received an amount of $2x + 3$, then answer the following questions

How many families received the amount which was equally distributed ?

A. $3x^2 - 4x - 4$

B. $3x^2 + 4x - 4$

C. $3x^2 + 4x + 4$

D. $3x^2 - 4x + 4$

Answer: B



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12. Government of India allocated some funds for the refugees who came from Afghanistan for their welfare. The fund is to be equally divided between each of the families. If the funds allocated are represented by $6x^2 + 17x^2 + 4x - 12$ and each family received an amount of $2x + 3$, then answer the following questions

If each family decided to factorise the amount received, then the two factors are

A. $(3x+2), (x-2)$

B. $(3x-2), (x-2)$

C. $(3x+2), (x+2)$

D. $(3x-2), (x+2)$

Answer: D



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13. Government of India allocated some funds for the refugees who came from Afghanistan for their welfare. The fund is to be equally divided between each of the families. If the funds allocated are represented by $6x^2 + 17x^2 + 4x - 12$ and each family received an amount of $2x + 3$, then answer the following questions

If instead of $6x^3 + 17x^2 + 4x - 12$ an amount of $6x^3 - 13x^2 + 13x + 70$ is allocated by the government then the amount left after equally distributing to each family is

A. 1

B. $x+1$

C. $x-1$

D. 12

Answer: A



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14. Government of India allocated some funds for the refugees who came from Afghanistan for their welfare. The fund is to be equally divided between each of the families. If the funds allocated are represented by $6x^2 + 17x^2 + 4x - 12$ and each family received an amount of $2x + 3$, then answer the following questions

How many families would have been benefited, if the funds allocated were $6x^3 - 13x^2 + 12x + 7$?

A. $3x^2 + 17x + 4$

B. $3x^2 - 4x^2 - 19$

C. $3x^2 - 11x + 23$

D. $3x^2 - 14x + 7$

Answer: C



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15. Government of India allocated some funds for the refugees who came from Afghanistan for their welfare. The fund is to be equally divided between each of the families. If the funds allocated are represented by $6x^2 + 17x^2 + 4x - 12$ and each family received an amount of $2x + 3$, then answer the following questions

If $x = 2$, the value of the polynomial $f(x) = 6x^3 + 17x^2 + 4x - 12$ is

A. -24

B. 128

C. 136

D. 112

Answer: D



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