



MATHS

BOOKS - PEARSON IIT JEE

FOUNDATION

REMAINDER AND FACTOR THEOREMS

Example

1. Find the remainder when the polynomial

$$p(z) = z^3 - 3z + 2 \text{ is divided by } z-2.$$



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2. Find the value of a if $ax^3 - (a + 1)x^2 + 3x - 5a$ is divisible by $(x - 2)$.



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3. If the polynomial $x^3 + ax^2 - bx - 30$ is exactly divisible by $x^2 - 2x - 15$. Find a and b and also the third factor.



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4. Find the linear polynomial in x which when divided by $(x - 3)$ leaves 6 as remainder and is exactly divisible by $(x + 3)$.



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5. A quadratic polynomial in x leaves remainders as 4 and 7 respectively when divided by $(x + 1)$ and $(x - 2)$. Also it is

exactly divisible by $(x - 1)$. Find the quadratic polynomial.



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6. Find a common factor of the quadratic polynomials $3x^2 - x - 10$ and $2x^2 - x - 6$.



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7. Find the remainder when x^{999} is divided by $x^2 - 4x + 3$.



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8. Find the remainder when x^5 is divided by $x^3 - 4x$.



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9. If $f(x + 2) = x^2 + 7x - 13$, then find the remainder when $f(x)$ is divided by $(x + 2)$.

A. -25

B. -12

C. -23

D. -11

Answer: A



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10. If $(x - 2)$ and $(x - 3)$ are two factors of $f(x) = x^3 + ax + b$, then find the remainder when $f(x)$ is divided by $x - 5$.

A. 0

B. 15

C. 30

D. 60

Answer: D



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11. If the polynomials $f(x)$
 $= x^2 + 5x - p$ and $g(x) = x^2 - 2x + 6p$

have a common factor , then find the common factor .

A. $x + 2$

B. x

C. $x + 4$

D. Either (b) or (c)

Answer:



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12. When a fourth degree polynomial $f(x)$ is divided by $(x + 6)$, the quotient is $Q(x)$ and the remainder is -6 . And when $f(x)$ is divided by $[Q(x) + 1]$, the quotient is $(x + 6)$ and the remainder is $R(x)$. Find $R(x)$.

A. $12 + x$

B. $-(x + 12)$

C. 0

D. 3

Answer:



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13. Given $f(x)$ is a cubic polynomial in x . If $f(x)$ is divided by $(x + 3)$, $(x + 4)$, $(x + 5)$ and $(x + 6)$, then it leaves the remainders 0, 0, 4 and 6 respectively. Find the remainder when $f(x)$ is divided by $x + 7$.

A. 0

B. 1

C. 2

D. 3

Answer:



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Test Your Concepts Very Short Answer Type Questions

1. Let $f(x) = a_0x^n + a_1x^{n-1} + \dots + a_n (a_0 \neq 0)$ be a

polynomial of degree n . If $x+1$ is one of its factors, then_____.



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2. If a polynomial $f(x)$ is divided by $(x + a)$, then the remainder obtained is _____.



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3. If a and b are distinct integers, prove that $a - b$ is a factor of $a^n - b^n$, wherever n is a

positive integer.



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4. If $f(x) = x^3 + 2$ is divided by $x + 2$. Then the remainder obtained is _____.



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5. The condition for which $ax^2 + bx + a$ is exactly divisible by $x - a$ is _____.



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6. If $x+1$ is a factor of $x^n + 1$, then n is _____.



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7. The remainder when $f(x) = x^3 + 5x^2 + 2x + 3$ is divided by x is _____.



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8. The remainder when $(x - a)^2 + (x - b)^2$ is divided by x is _____.



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9. The remainder when $x^6 - 4x^5 + 8x^4 - 7x^3 + 3x^2 + 2x - 7$ is divided by $x - 1$ is _____.



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10. For two odd numbers x and y , if $x^3 + y^3$ is divisible by 2^k , $k \in \mathbb{N}$, then $x+y$ is divisible by 2^k . [True/False]



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11. One of the factors of $2x^{17} + 3x^{15} + 7x^{33}$ is _____ . $(x^{17} / x^{15} / x^{23})$



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12. If $(x - 2)^2$ is the factor of an expression of the form $x^3 + bx + c$, then the other factor is _____.



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13. What should be added to $3x^3 + 5x^2 - 6x + 3$ to make it exactly divisible by $x - 1$?



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14. The remainder when $2x^6 - 5x^3 - 3$ is divided by $x^3 + 1$ is _____.



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15. The remainder when $f(x)$ is divided by $f(x)$ is $f\left(-\frac{3}{2}\right)$, then $g(x)$ is necessarily $2x + 3$ [True/False]



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16. Find the remainder when the polynomial

$$x^2 + 13x + 11 \text{ is divided by } x - 1.$$



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17. Find the value of the polynomial

$$a^2 - \frac{1}{6}a + \frac{3}{2} \text{ when } a = \frac{1}{2}.$$



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18. The polynomial $7x^2 - 11x + a$ when divided by $x + 1$ leaves a remainder of 8. Then find the value of 'a'.



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19. If $x + 2$ is a factor of $f(x)$ and $f(x) = x^3 + 4x^2 + kx - 6$, then find the value of k .



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20. Find the values of a if $x^3 - 5x(a - 1) - 3(x + 1) + 5a$ is divisible by $x - a$.



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21. Find the value of a if $x - a$ is a factor of the polynomial

$$x^5 - ax^4 + x^3 - ax^2 + 2x + 3a - 2.$$



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22. Find the remainder when $x^3 + 3px + q$ is divided by $(x^2 - a^2)$ without actual division.



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23. The remainder obtained when $x^2 + 3x + 1$ is divided by $(x - 5)$ is _____.



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24. If the polynomial $3x^4 - 11x^2 + 6x + k$ is divided by $x - 3$, it leaves a remainder 7. Then

the value of k is _____.



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25. $(7x - 1)$ is a factor of $7x^3 + 6x^2 - 15x + 2$. (True/False)



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26. If $ax^2 + bx + c$ is exactly divisible by $2x - 3$, then the relation between a , b and c is _____.



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27. If $x^2 + 5x + 6$ is a factor of $x^3 + 9x^2 + 26x + 24$, then find the remaining factor.



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28. If $(2x - 1)$ is a factor of $2x^2 + px - 2$, then the other factor is _____.



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29. The expression $x^m - 1$ is divisible by $x + 1$, only if M is _____.(even/odd)



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30. If $x + m$ is one of the factors of the polynomial $x^2 + mx - m + 4$, then the value of m is _____.



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Short Answer Type Questions

1. For what values of m and n is $2x^4 - 11x^3 + mx + n$ divisible by $x^2 - 1$?



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2. Find a linear polynomial which when divided by $(2x + 1)$ and $(3x + 2)$ leaves remainders 3 and 4, respectively.



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3. Prove that $x^m + 1$ is a factor of $x^{mn} - 1$ if n is even.



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4. The remainders of a polynomial $f(x)$ in x are 10 and 15 respectively when $f(x)$ is divided by $(x - 3)$ and $(x - 4)$. Find the remainder when $f(x)$ is divided by $(x - 3)(x - 4)$.



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5. If x^{555} is divided by $x^2 - 4x + 3$, then find its remainder.



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6. If $(x^2 - 1)$ is a factor of $ax^3 - bx^2 - ax + d$, then find the relation between a and c .



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7. When $x^4 - 3x^3 + 4x^2 + p$ is divided by $(x-2)$, the remainder is zero Find the value of p .



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8. Find the common factors of the expressions $a_1x^2 + b_1x + c_1$ and $a_2x^2 + b_2x + c_1$ where $c_1 \neq 0$.



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9. If $(x - 3)$ is a factor of $x^2 + q$ (where $q \in \mathbb{Q}$), then find the remainder when $(x^2 + q)$ is divided by $(x - 2)$.



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10. If $p + q$ is a factor of the polynomial $p^n - q^n$, then n is _____.



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11. The expression $x^{4005} + y^{4005}$ is divided by _____.



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12. The value of a for which $x - 7$ is a factor of $x^2 + 11x - 2z$, is _____.



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13. If a polynomial $f(x)$ is divided by $(x - 3)$ and $(x - 4)$ it leaves remainders as 7 and 12 respectively, then find the remainder when $f(x)$ is divided by $(x - 3)(x - 4)$.



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14. Find the remainder when $5x^4 - 11x^2 + 6$ is divided by $5x^2 - 6$.



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Essay Type Questions

1. If $f(x - 2) = 2x^2 - 3x + 4$, then find the remainder when $f(x)$ is divided by $(x-1)$.



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2. Factorize $x^4 - 2x^3 - 9x^2 + 2x + 8$ using remainder theorem.



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3. Find the remainder when x^{29} is divided by $x^2 - 2x - 3$.



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4. If $x^2 - 2x - 1$ is a factor of $px^3 + qx^2 + 1$, (where p, q are integers) then find the value of $p + q$.



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5. If $x^2 - x + 1$ is a factor of $x^4 + ax^2 + b$, then the values of a and b are respectively _____.



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6. If $lx^2 + mx + n$ is exactly divisible by $(x - 1)$ and $(x + 1)$ and leaves a remainder 1 when divided by $x + 2$, then find m and n .



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Level 1

1. The value of a which the polynomial $y^3 + ay^2 - 2y + a + 4$ in y has $(y + a)$ as one of its factors is _____.

A. $\frac{-3}{4}$

B. $\frac{4}{3}$

C. $\frac{3}{4}$

D. $\frac{-4}{3}$

Answer: D



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2. If the expression $2x^3 - 7x^2 + 5x - 3$ leaves a remainder of $5k - 2$ when divided by $x + 1$, then find the value of k .

A. 3

B. -3

C. 5

D. -5

Answer: B



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3. Find the remainder when $x^{2003} + y^{6009}$ is divided by $x + y^3$.

A. y^{4006}

B. 1

C. 0

D. y^{4000}

Answer: C



4. Find the remainder when $x^6 - 7x^3 + 8$ is divided by $x^3 - 2$.

A. -2

B. 2

C. 7

D. 1

Answer: A



5. If both the expressions $x^{1248} - 1$ and $x^{672} - 1$, are divisible by $x^n - 1$, then the greatest integer value of n is

A. 48

B. 96

C. 54

D. 112

Answer: B



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6. When $x^2 - 7x + 2$ is divided by $x - 8$, then the remainder is _____.

A. 122

B. 4

C. 45

D. 10

Answer: D



7. If $ax^2 + bx + c$ is exactly divisible by $4x + 5$, then

A. $25a - 5b + 16c = 0$.

B. $25a + 20b + 16c = 0$.

C. $25a - 20b - 16c = 0$.

D. $25a - 20b + 16c = 0$.

Answer: D



8. The expression $2x^3 + 3x^2 - 5x + p$ when divided by $x + 2$ leaves a remainder of $3p + 2$.

Find p .

A. -2

B. 1

C. 0

D. 2

Answer: D



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9. $3x - 4$ is a factor of _____.

A. $18x^4 - 3x^3 - 28x^2 - 3x + 4$

B. $3x^4 - 10x^3 - 7x^2 + 38x - 24$

C. $9x^4 - 6x^3 + 5x^2 - 15$

D. $9x^4 + 36x^3 + 17x^2 - 38x - 24$

Answer: A



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10. Which of the following is a factor of

$$5x^{20} + 7x^{15} + x^9?$$

A. x^{20}

B. x^{15}

C. x^9

D. x^{24}

Answer: C



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11. If $(x - 2)$ and $(x - 3)$ are two factors of $f(x) = x^3 + ax + b$, then find the remainder when $f(x)$ is divided by $x - 5$.

A. 1

B. 0

C. 5

D. 4

Answer: B



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12. The expression $x^{mn} + 1$ is divisible by $x + 1$, only if

A. n is odd.

B. m is odd.

C. both m and n are even.

D. Cannot say.

Answer: B



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13. If both the expressions $x^{1215} - 1$ and $x^{945} - 1$, are divisible by $x^n - 1$, then the greatest integer value of n is _____.

A. 135

B. 270

C. 945

D. None of these.

Answer: A



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14. If $(x - 2)$ is a factor of $x^2 + bx + 1$ (where $b \in \mathbb{Q}$), then find the remainder when $(x^2 + bx + 1)$ is divided by $2x + 3$.

A. 7

B. 8

C. 1

D. 0

Answer: A



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15. When $x^3 + 3x^2 + 4x + a$ is divided by $(x + 2)$, the remainder is zero. Find the value of a .

A. 4

B. 6

C. -8

D. -12

Answer: A



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16. If $(x + 1)$ and $(x - 1)$ are the factors of $ax^3 + bx^2 + cx + d$, then which of the following is true?

A. $a + b = 0$

B. $b + c = 0$

C. $b + d = 0$

D. $a + c = 0$

Answer: C



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17. Find the remainder when x^5 is divided by $x^2 - 9$.

A. $81x$

B. $81x + 10$

C. $3^5x + 34$

D. 81

Answer: A



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18. The remainder when $x^{45} + x^{25} + x^{14} + x^9 + x$ divided by $x^2 - 1$ is _____.

A. $4x - 1$

B. $4x + 2$

C. $4x + 1$

D. $4x - 2$

Answer: C



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19. For what values of a and b , the expression $x^4 + 4x^3 + ax^2 - bx + 3$ is a multiple of $x^2 - 1$?

A. $a = 1, b = 7$

B. $a = 4, b = -4$

C. $a = 3, b = -5$

D. $a = -4, b = 4$

Answer: D



20. When the polynomial $p(x) = ax^2 + bx + c$ is divided by $(x - 1)$ and $(x + 1)$, the remainders obtained are 6 and 10 respectively. If the value of $p(x)$ is 5 at $x = 0$, then the value of $5a - 2b + 5c$ is _____.

A. 40

B. 44

C. 21

D. 42

Answer: B



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21. If $p - q$ is a factor of the polynomial $p^n - q^n$, then n is _____.

A. a prime number

B. an odd number

C. an even number

D. All of these

Answer: C



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22. When the polynomial $f(x) = ax^2 + bx + c$ is divided by x , $x - 2$ and $x + 3$ remainders obtained are 7, 9 and 49 respectively. Find the value of $3a + 5b + 2c$.

A. -2

B. 2

C. 5

D. -5

Answer: A



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23. If $f(x + 1) = 2x^2 + 7x + 5$, then one of the factors of $f(x)$ is _____.

A. $2x + 3$

B. $2x^2 + 3$

C. $3x + 2$

D. $2x + 1$

Answer: A



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24. If $(x - p)$ and $(x - q)$ are the factors of $x^2 + px + q$, then the values of p and q are respectively _____.

A. $1, -2$

B. $2, -3$

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

D. $-2, 1$

Answer: A



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25. Let $f\left(x - \frac{1}{x}\right) = x^2 + \frac{1}{x^2}$, find the remainder when $f(x)$ is divided by $x - 3$.

A. $\frac{82}{9}$

B. $\frac{8}{3}$

C. 10

D. 11

Answer: D



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26. If $(x - 2)^2$ is a factor of

$f(x) = x^3 + px + q$, then find the remainder

when $df(x)$ is divided by $x - 1$.

A. 4

B. -4

C. -5

D. 5

Answer: D



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27. A quadratic polynomial in x leaves remainders 4 , 4 and 0 , respectively when

divided by $(x - 1)$, $(x - 2)$ and $(x - 3)$. Find the quadratic polynomial.

A. $-2x^2 + 6x + 3$

B. $-2x^2 + 6x$

C. $-2x^2 + 6x + 5$

D. $-2x^2 + 6x - 5$

Answer: B



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28. If $f(x + 3) = x^2 + x - 6$, then one of the factors of $f(x)$ is _____.

A. $x - 3$

B. $x - 4$

C. $x - 5$

D. $x - 6$

Answer: C



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29. If $(x - 1)^2$ is a factor of $f(x) = x^3 + bx + c$, then find the remainder when $f(x)$ is divided by $(x - 2)$.

A. 2

B. -3

C. 4

D. -4

Answer: C



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30. For what values of m and n , the expression $2x^2 - (m + n)x + 2n$ is exactly divisible by $(x - 1)$ and $(x - 2)$?

A. $m = 5, n = 2$

B. $m = 3, n = 4$

C. $m = 4, n = 2$

D. $m = 2, n = 4$

Answer: C



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1. The ratio of the remainders when the expression $x^2 + bx + c$ is divided by $(x - 3)$ and $(x - 2)$ respectively is 4:5. Find b and c , if $(x - 1)$ is a factor of the given expression.

A. $b = \frac{-11}{3}, c = \frac{14}{3}$

B. $b = \frac{-11}{3}, c = \frac{11}{3}$

C. $b = \frac{-14}{3}, c = \frac{11}{3}$

D. None of these.

Answer: B



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2. If the polynomials $f(x) = x^2 + 9x + k$ and $g(x) = x^2 + 10x + 1$ have a common factor, then $(k - l)^2$ is equal to

A. $9l - 10k$

B. $10l - 9k$

C. Both (a) and (b)

D. None of these.

Answer: A



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3. When $f(x)$ is divided by $(x - 2)$, the quotient is $Q(x)$ and the remainder is zero.

And when $f(x)$ is divided by $[Q(x) - 1]$, the quotient is $(x - 2)$ and the remainder is $R(x)$.

Find the remainder $R(x)$.

A. $x + 2$

B. $-x + 2$

C. $x - 2$

D. Cannot be determined

Answer: C



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4. Find the values of m and n , if $(x - m)$ and $(x - n)$ are the factors of the expression $x^2 + mx - n$.

A. $m = -1, n = -2$

B. $m = 0, n = 1$

C. $m = \frac{-1}{2}, n = \frac{1}{2}$

D. $m = -1, n = 2$

Answer: D



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5. Let $f\left(x + \frac{1}{x}\right) = x^2 + \frac{1}{x^2}$, find the remainder when $f(x)$ is divided by $2x + 1$.

A. $\frac{-97}{36}$

B. $\frac{97}{36}$

C. $\frac{-99}{36}$

D. $\frac{99}{36}$

Answer: A



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6. A polynomial $f(x)$ leaves remainders 10 and 14 respectively when divided by

$(x - 3)$ and $(x - 5)$ Find the remainder when $f(x)$ is divided by $(x - 3)$ and $(x - 5)$.

A. $2x + 6$

B. $2x - 4$

C. $2x + 4$

D. $2x - 6$

Answer: C



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7. If $f(x + 3) = x^2 - 7x + 2$, then find the remainder when $f(x)$ is divided by $(x + 1)$.

A. 8

B. -4

C. 20

D. 46

Answer: D



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8. A polynomial $f(x)$ when divided by $(x - 5)$ and $(x - 7)$ leaves remainders 6 and 16, respectively. Find the remainder when $f(x)$ is divided by $(x - 5)(x - 7)$.

A. $5x + 7$

B. $5x - 7$

C. $5x + 19$

D. $5x - 19$

Answer: A



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9. A polynomial $p(x)$ leaves remainders 75 and 15, respectively, when divided by $(x - 1)$ and $(x + 2)$. Then the remainder when $f(x)$ is divided by $(x - 1)(x + 2)$ is _____.

A. $5(4x + 11)$

B. $5(4x - 11)$

C. $5(3x + 11)$

D. $5(3x - 11)$

Answer: A



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10. The leading coefficient of a polynomial $f(x)$ of degree 3 is 2006 . Suppose that $f(1) = 5$, $f(2) = 7$ and $f(c) = 9$. Then find $f(x)$.

A. $2006(x - 1)(x - 2)(x - 3) + 2x + 3$

B. $2006(x - 1)(x - 2)(x - 3) + 2x + 1$

C. $2006(x - 1)(x - 2)(x - 3) + 2x - 1$

D. $2006(x - 2)(x - 3)(x - 1) - (2x - 3)$

Answer: A



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11. The ratio of the remainders when the expression $x^2 + ax + b$ is divided by $(x - 2)$ and $(x - 1)$, respectively is $4:3$. Find a and b if $(x + 1)$ is a factor of the expression.

A. 9, - 10

B. $-9, 10$

C. $9, 10$

D. $-9, -10$

Answer: D



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12. If $x^3 - ax^2 + bx - 6$ is exactly divisible by

$x^2 - 5x + 6$, then $\frac{a}{b}$ is _____.

A. $\frac{6}{11}$

B. $\frac{-6}{11}$

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

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

Answer: A



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13.

if

$$f(x) = x^2 + 5x + a \text{ and } g(x) = x^2 + 6x + b$$

have a common factor , then which of the

followings is true?

A. $(a - b)^2 + 5(a - b) + b = 0$

B. $(a + b)^2 + 5(a + b) + a = 0$

C. $(a + b)^2 + 6(a + b) + b = 0$

D. $(a - b)^2 + 6(a - b) + b = 0$

Answer: D



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14. If $ax^4 + bx^3 + cx^2 + dx$ is exactly divisible by $x^2 - 4$ then $\frac{a}{c}$ is _____.

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

B. $\frac{-1}{4}$

C. $\frac{-1}{8}$

D. $\frac{1}{8}$

Answer: B



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15. If $x^2 + x + 1$ is a factor of $x^4 + ax^2 + b$,
then the values of a and b , respectively are

_____.

A. 2 , 4

B. 2 , 1

C. 1 , 1

D. 1 , 2

Answer: C



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16. If $(x + 1)$ and $(x - 1)$ are the factors of $x^3 + ax^2 - bx - 2$, then find the other factor of the given polynomial.

The following are the steps involved in solving the problem given above . Arrange them in the sequential order.

(A) Put $x = -1$ in the given polynomial and obtain the equations in a and b .

(B) Substitute a and b in the given polynomial.

(C) Factorize the polynomial.

(D) Solve the equations in a and b .

A. ADCB

B. ADBC

C. ABCD

D. ABDC

Answer: B



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17. The following are the steps involved in finding the value of a when $x - 2$ is a factor of $3x^2 - 7x + a$. Arrange them in sequential order.

(A) $12 - 14 + a = 0 \Rightarrow a = 2$

(B) By factor theorem ,

$$f(2) = 0 \Rightarrow 3(2)^2 - 7(2) + a = 0$$

(C) Let $f(x) = 3x^2 - 7x + a$

A. CBA

B. BCA

C. CAB

D. BAC

Answer: A



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18. If $px^3 + qx^2 + rx + s$ is exactly divisible by $x^2 - 1$, then which of the following is /are necessarily true ?

(A) $p = r$

(B) $q = s$

(C) $p = -r$

(D) $q = -s$

A. Both (A) and (B)

B. Both (C) and (D)

C. Both (A) and (B)

D. Both (B) and (C)

Answer: B



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19. Which of the following is a factor of $x^3 + 3px^2 - 3pqx - q^3$? (where p and q are constants)

A. $x + p$

B. $x + q$

C. $x - p$

D. $x - q$

Answer: D



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20. If $(x - k)$ is a common factor of $x^2 + 3x + a$ and $x^2 + 4x + b$, then find the value of k in terms of a and b .

A. $a + b$

B. $a - b$

C. $2a + 3b$

D. $2a - 3b$

Answer: B



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Level 3

1. Find the remainder when x^{33} is divided by $x^2 - 3x - 4$.

- A. $\left(\frac{4^{33} - 1}{5}\right)x + \left(\frac{4^{33} - 4}{5}\right)$
- B. $\left(\frac{4^{33} + 1}{5}\right)x + \left(\frac{4^{33} - 4}{5}\right)$
- C. $\left(\frac{4^{33} - 1}{5}\right)x + \left(\frac{4^{33} + 4}{5}\right)$
- D. $\left(\frac{4^{33} - 4}{5}\right)x + \left(\frac{4^{33} - 4}{5}\right)$

Answer: B



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2. If $6x^2 = 3x - 1$ is a factor of $ax^3 + bx - 1$ (where a, b are integers), then find the value

of b.

A. 1

B. 3

C. -5

D. -7

Answer: C



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3. If the polynomials

$$f(x) = x^2 + 6x + p \text{ and } g(x) = x^2 + 7x + q$$

have a common factor, then which of the following is true?

A. $p^2 + q^2 + 2pq + 6p - 7q = 0$

B. $p^2 + q^2 - 2pq + 7p - 6 = 0$

C. $p^2 + q^2 - 2pq + 6p - 7p = 0$

D. $p^2 + q^2 - 2pq + 7p - 6q = 0$

Answer: B



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4. A polynomial of degree 2 in x , when divided by $(x + 1)$, $(x + 2)$ and $(x + 3)$, leaves remainders 1, 4 and 3 respectively. Find the polynomial.

A. $\frac{1}{2}(x^2 + 9x + 6)$

B. $\frac{1}{2}(x^2 - 9x + 6)$

C. $\frac{-1}{2}(x^2 - 9x + 6)$

D. $\frac{-1}{2}(x^2 + 9x + 6)$

Answer: D



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5. When a third degree polynomial $f(x)$ is divided by $(x - 3)$, the quotient is $Q(x)$ and the remainder is zero. Also when $f(x)$ is divided by $[Q(x) + x + 1]$, the quotient is $(x - 4)$ and remainder is $R(x)$. Find the remainder $R(x)$.

A. $Q(x) + 3x + 4 + x^2$

B. $Q(x) + 4x + 4 - x^2$

C. $Q(x) + 3x + 4 - x^2$

D. Cannot be determined

Answer: C



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6. If the expression $x^2 + 3x - 3$, is divided by $(x - p)$, then it leaves remainder 1. Find the value of p .

A. 1

B. -3

C. -4

D. either (a) or (c)

Answer: D



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7. If $ax^3 - 5x^2 + x + p$ is divisible by $x^2 - 3x + 2$, then find the values of a and p .

A. $a = 2, p = 2$

B. $a = 2, p = 3$

C. $a = 1, p = 3$

D. $a = 1, p = 2$

Answer: A



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8. Which of the following should be added to $9x^3 + 6x^2 + x + 2$, so that the sum is divisible by $(3x + 1)$?

A. -4

B. -3

C. -2

D. -1

Answer: C



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9. If the expression $6x^2 + 13x + k$ is divisible by $2x + 3$. Then which of the following is the factor of the expression ?

A. $3x + 1$

B. $3x + 4$

C. $3x + 2$

D. $3x + 5$

Answer: C



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10. Given $ax^2 + bx + c$ is a quadratic polynomial in x and leaves remainders 6 , 11 and 18 , respectively, when divided by

$(x + 1)$, $(x + 2)$ and $(x + 3)$. Find the value of $a + b + c$.

A. 1

B. 2

C. 3

D. 4

Answer: B



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