MATHS

BOOKS - S CHAND IIT JEE FOUNDATION

ALGEBRAIC EXPRESSIONS

Question Bank 6

1. Which of the following expressions is not a polynomial?

A. $6y^3 + 5y^2 - 2y - 9$

B. $-\dfrac{2}{9}x^2 y + \dfrac{4}{13}x^2 y^2 + 6y^3$

C. $\left(a^3 - 8a\right)\left(x^4 + 6\right)$

D. $\dfrac{5x^4 + 7x^2 y^2 - 8}{y}$

Answer: D

2. Which of the following expression is a polynomial?

A. $y^2 + \sqrt{2}y(x - 4) + x$

B. $\sqrt[3]{9x} + x^4 - x$

C. $a^{-\frac{1}{2}} + \sqrt{5}a + 6$

D. $4\sqrt{x} + xy - 1$

Answer: A

3. What is the degree of the polynomial $2a^2 + 4b^8$?

A. 2

B. 10

C. 8

D. 0

Answer: C

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4. Degree of a constant term is

A. 1

B. 0

C. 2

D. not defined

Answer: B

5. Degree of the polynomial $\left(a^2 + 1\right)\left(a + 2\right)\left(a^3 + 3\right)$ is

A. 3

B. 6

C. 2

D. 7

Answer: B

6. If the degree of the polynomial $\left(p^6 + \dfrac{3}{7}\right)(p^n + 3p)$ is 9, then the value of n is

A. 1

B. 3

C. 6

D. 18

Answer: B

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7. The sum of three expressions is $x^2 + y^2 + z^2$. If two of them are $4x^2 - 5y^2 + 3z^2$ and $-3x^2 + 4y^2 + 2z^2$ then the third expression is

A. $2x^2 + 2z^2$

B. $2y^2$

C. $2x^2 + 2y^2 - z^2$

D. $2y^2 + 2z^2$

Answer: B

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8. If

$P = 3x - 4y - 8z, Q = -10y + 7x + 11z$ and $R = 19z - 6y + 4x$

, then $P - Q + R$ is equal to

A. $13x - 20y + 16z$

B. 0

C. $x + y + z$

D. $2x - 4y + 3z$

Answer: B

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9. The product of $4a^2,\ -6b^2$ and $3a^2b^2$ is

A. a^2b^2

B. $13a^4b^4$

C. $-72a^4b^4$

D. a^4b^4

Answer: C

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10. $\left(14x^2yz - 28x^2y^2z^3 + 32y^2z^2\right) \div \left(-4xy\right)$ is equal to

A. $\dfrac{7}{2}yz + 7xyz^2 + 8xyz$

B. $-\dfrac{7}{2}xz + 7xyz^3 - \dfrac{8yz^2}{x}$

C. $-\dfrac{7}{2}xz - 7xyz^3 + \dfrac{8yz^2}{x}$

D. $\dfrac{7}{2}xz - 7xyz^2 - \dfrac{8yz^2}{x}$

Answer: B

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11. The product of $\left(\dfrac{1}{5}x^2 - \dfrac{1}{6}y^2\right)$ and $\left(5x^2 + 6y^2\right)$ is

A. 1

B. $x^4 + \dfrac{11}{60}x^2y^2 + y^4$

C. $x^4 + \dfrac{11}{30}x^2y^2 - y^4$

D. $x^4 - \dfrac{11}{30}x^2y^2 - y^4$

Answer: C

12. The product $(x + 2)(x^2 - 2x + 4)$ is equal to

A. $x^3 + 8$

B. $x^3 - 8$

C. $x^3 - 4x^2 + 4x - 8$

D. $x^3 + 4x^2 + 2x + 8$

Answer: A

13. $(x + 4)(x + 3) - (x - 4)(x - 3)$ is equal to

A. $2x^2 - 14x + 24$

B. $2x^2 + 14x - 24$

C. 14x

D. 24

Answer: C

14. If $\left(x^2 + 4x - 21\right)$ is divided by $x + 7$, then the quotient is

A. $x + 3$

B. $x - 3$

C. $x^2 - 2$

D. $x - 4$

Answer: B

15. What is the remainder when $13x^2 + 22x - 10$ is divided by $x + 2$?

A. 2

B. -2

C. 0

D. -4

Answer: B

16. A polynomial when divided by $(x - 6)$, gives a quotient $x^2 + 2x - 13$ and leaves a remainder -8. The polynomial is

A. $x^3 + 4x^2 + 25x - 78$

B. $x^3 - 4x^2 - 25x + 70$

C. $x^3 - 4x^2 - 25x + 70$

D. $x^3 + 4x^2 - 25x + 78$

Answer: B

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17. For a polynomial, dividend is $x^4 + 4x - 2x^2 + x^3 - 10$, quotient is $x^3 + 3x^2 + 4x + 12$ and remainder is 14, then divisor is equal to

A. $x^2 + 2$

B. $x^2 - 2$

C. $x + 2$

D. $x - 2$

Answer: D

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18. What is the quotient when $10a^2 + 3a - 27$ is divided by $2a - 3$

A. $5a - 9$

B. $(-5a - 9)$

C. $(-5a + 9)$

D. $5a + 9$

Answer: D

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19. If $\left(14x^2 + 13x - 15\right)$ is divided by $(7x - 4)$, the degree of the remainder is

A. 1

B. 2

C. 0

D. 3

Answer: C

20.

$x + y - (z - x - [y + z - (x + y - \{z + x - (y + z + x)\})]) $ is equal to

A. x

B. y

C. z

D. 0

Answer: A

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21. The remainder when $x^3 - 2x^2$ is divided by x^2 is

A. 1

B. $x - 2 + \dfrac{4}{x}$

C. 0

D. $4x - 2x^2$

Answer: C

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22. What must be added to $\dfrac{1}{x}$ to make it equal to x ?

A. $\dfrac{x^2 - x}{x^2}$

B. $\dfrac{x}{x^2 - 1}$

C. $\dfrac{x^2 + 1}{x}$

D. $\dfrac{x^2 - 1}{x}$

Answer: D

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23. Using the formula : $W = np + \dfrac{1}{2}NX^2$, frame a formula for X.

A. $\sqrt{\dfrac{Wn - P}{2N}}$

B. $\sqrt{\dfrac{2(W - np)}{N}}$

C. $\sqrt{\dfrac{np - W}{2N}}$

D. $\sqrt{\dfrac{W + np}{2N}}$

Answer: B

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24. If $A = \pi\left(R^2 - r^2\right)$, then R is equal to

A. $\sqrt{\dfrac{A - \pi r^2}{\pi}}$

B. $\sqrt{\dfrac{A + \pi r^2}{\pi}}$

C. $\sqrt{\dfrac{r^2\pi - A}{\pi}}$

D. $\sqrt{\dfrac{r^2\pi - A}{r}}$

Answer: B

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25. $\dfrac{3}{4}(a + y) - \left[y + a - \dfrac{1}{3}\left(y + a - \dfrac{1}{4}(a + y)\right)\right]$ is equal to

A. $a + y$

B. 3a

C. $-4y$

D. 0

Answer: D

Self Assessment Sheet 6

1. Figureshows a number of equal steps. If the 'rise' of each step is

h cm, are there are n steps, make a formula for the height (H) in

centrimeters of the steps.
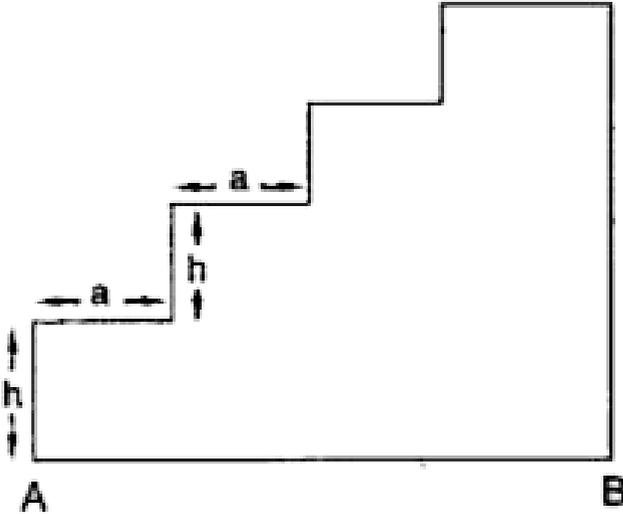

A. $H = \dfrac{1}{2}nH$

B. $H = 2nh$

C. $H = nh$

D. $H = n^2h$

Answer: C

Self Assessment Sheet 7

1. If the 'tread' of each step is a cm, and there are n steps, make a formula for the length (d cm) of AB.
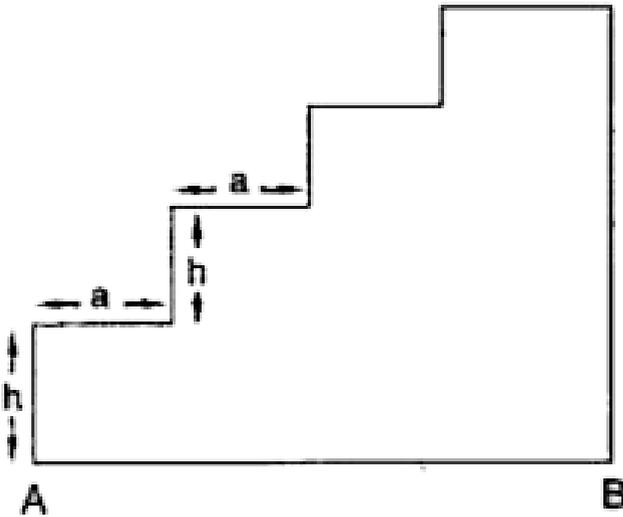
A. $d = \dfrac{1}{2}na$

B. $d = na$

C. $d = 3na$

D. $d = na^2$

Answer: B

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Self Assessment Sheet 8

1. If stair carpet is laid, starting at A, how many centimeters will be required for n steps?
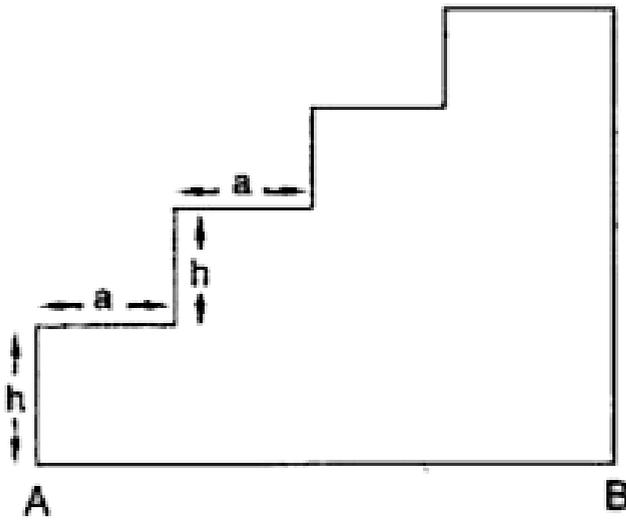
A. $\dfrac{1}{2}nh + na$

B. $nh + \dfrac{1}{2}na$

C. $2(nh + na)$

D. $nh + na$

Answer: D

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1. The formula for the area, A sq cm of the white cross is
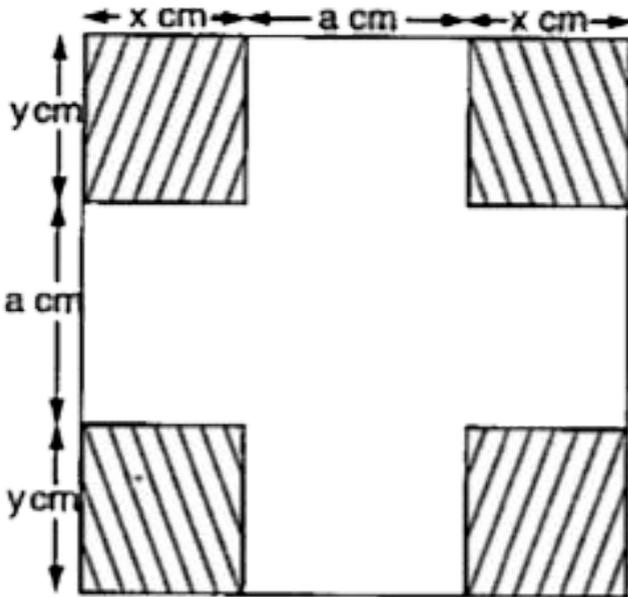
A. $A = 4ax + 4ay + a^2$

B. $A = 2ax + 4ay + a^2$

C. $A = 2ax + 2ay + a^2$

D. None of these

Answer: C

Self Assessment Sheet 10

1. If $P = \dfrac{W}{2g}(v^2 - u^2)$, then the value of P when $W = 40, g = 32, u = 4, v = 12$ is

A. 80

B. 82

C. 90

D. 78

Answer: A

1. If $\dfrac{1}{f} = \dfrac{1}{p} + \dfrac{1}{q}$ and $p = 2, q = 3$, then f is

A. $2\dfrac{1}{5}$

B. $1\dfrac{1}{5}$

C. $3\dfrac{1}{2}$

D. $3\dfrac{2}{5}$

Answer: B

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1. The remainder when $3x^2 + 5x - 7$ is divided by $x + 3$ is

A. -5

B. 4

C. 2

D. 5

Answer: D

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Self Assessment Sheet 13

1. Simplify:

$$a^2b(a^3 - a + 1) - ab(a^4 - 2a^2 + 2a) - b(a^3 - a^2 - 1)$$

A. $-a^2b$

B. ab

C. b

D. 0

Answer: C

Self Assessment Sheet 14

1. The value of the product $\left(4a^2 + 3b\right)\left(9b^2 + 4a\right)$ at $a = 1, b = -2$ is

A. 60

B. -80

C. 70

D. -50

Answer: B

1. The expression that should be subtracted from $4x^4 - 2x^3 - 6x^2 + x - 5$ so that it may be exactly divisible by $2x^2 + x - 2$ is

    A. $3x + 5$

    B. $-3x - 5$

    C. $-3x + 5$

    D. $3x - 5$

Answer: B

1. The area of a rectangular courtyard is $(10x^3 - 11x^2 + 19x + 10)$ sq units. If one of its sides is $(2x^2 - 3x + 5)$ units, then the other side is

A. $(5x + 2)$ units

B. $-5x + 2$ units

C. $-(5x + 2)$ units

D. $5x - 2$ units

Answer: A

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1. The smallest fraction, which should be added to the sum of $2\frac{1}{2}, 3\frac{1}{3}, 4\frac{1}{4}$ and $5\frac{1}{5}$ to make the result a whole number, is:

    A. -12

    B. 12

    C. $a^2 + a$

    D. $a - 1$

Answer: B

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