

### Class 08 Algebraic Expression Topic Division work sheet

1. what can be the possible degree of remainder of the following divisions?

(a)  $(x^4 + x^3) \div (x + 9) \div (x + 2)$  (b)  $(x^4 + y^2 - y - 3) \div (y^2 + 6)$

2. Divide and write the quotient and remainder in each of the following.

(a)  $x^3 + 2x^2 - 6x - 12$  by  $x + 2$  (b)  $10x^3 + 5x^2 - 10x + 5$  by  $2x + 1$

(c)  $15x^2 - 18x + 3$  by  $x + 1$  (d)  $-x^5 + x^4 - 3x^2 + 5x - 3$  by  $-x^2 + 1$

(e)  $x^4 - 6x^3 + 6x^2 + 12x + 6$  by  $x^2 - 6$

3. using division, state whether

a)  $x + 6$  is a factor of  $x^2 - x - 42$ .

b)  $4z - 3$  is a factor of  $4z^2 - 13z - 12$ .

c)  $2y - 5$  is a factor of  $4y^4 - 10y^3 - 10y^2 + 30y - 15$ .

d)  $3y^2 + 5$  is a factor of  $6y^5 + 15y^4 + 16y^3 + 4y^2 + 10y - 35$

e)  $z^2 + 3$  is a factor of  $z^5 - 9z$ .

4. Prove "dividend = quotient x divisor + remainder" for each of the following.

(a)  $(6x^2 - 7x - 5) \div (2x + 1)$  (b)  $(x^2 - 7xy - 18y^2) \div (x - 9y)$  (c)  $\frac{9x^2+6x+1}{3x+1}$

5. Find out whether or not the first polynomial is a factor of the second polynomial.

(a)  $(4a - 1), (12a^2 - 7a - 2)$  (b)  $3y + 1, 3y^3 + 7y^2 + 2y$  (c)  $x - 3, x^3 + 4x^2 - 3x + 5$

(d)  $(x^2 + 3), 4x^4 + 7x^2 - 15$  (e)  $p^2 + 9, p^4 + 13p^2 + 36$  (f)  $x + 11, x^2 + 9x - 22$

6. What will be the remainder when  $6x^5 + 4x^4 - 27x^3 - 7x^2 + 27x + 3/2$  is divided by  $(2x^2 - 3)$

7. If a train travels  $(30a^2 + 15a - 10)$  kilometres in 10 hours, what is its average speed?

8. If  $5x$  books cost  $(10x^2 + 20x)$ , what is the cost of one book?

9. If the area of a rectangular field is  $(21x^2 - 7x)$  and one of its sides is  $7x$ , what is its other side?

10. The area of a rectangular field is  $(a^2 - 19a + 90)$  square units, find the width of the rectangle if its length is  $(a - 9)$  units.

11. What must be subtracted from  $4x^4 - 2x^3 - 6x^2 + x - 5$  so that the result is exactly divisible by  $2x^2 + x - 2$ ?

12. Find the values of a and b so that  $x^4 + x^3 - 8x^2 + ax + b$  is divisible by  $(x^2 + 1)$ .

13. What should be subtracted from  $8x^4 + 14x^3 - 2x^2 + 7x - 8$ , so that the resulting polynomial is exactly divided by  $4x^2 + 3x - 2$ ?

14. Find the quotient and the remainder when the first polynomial is divided by the second.

(a)  $-6a^2 + 29a - 30, (3a - 4)$  (b)  $4p^3 + 7, (-p + 3)$  (c)  $y^4 - y^2 + 4, (y^2 - 4)$

15. Divide. (a)  $Y^2 - 5Y + 1$  by  $(-\frac{1}{3})Y$  (b)  $6x^3 - 4x^2 + 8x$  by  $\frac{2}{3}x$