



◇「콘텐츠산업 진흥법 시행령」제33조에 의한 표시
 1) 제작연월일 : 2018-03-05
 2) 제작자 : 교육지대(주)
 3) 이 콘텐츠는 「콘텐츠산업 진흥법」에 따라 최초 제작일부터 5년간 보호됩니다.

◇「콘텐츠산업 진흥법」외에도「저작권법」에 의하여 보호되는 콘텐츠의 경우, 그 콘텐츠의 전부 또는 일부를 무단으로 복제하거나 전송하는 것은 콘텐츠산업 진흥법 외에도 저작권법에 의한 법적 책임을 질 수 있습니다.

01 다항식의 나눗셈

1. (다항식)÷(단항식)의 꼴

$$(A+B) \div M = (A+B) \times \frac{1}{M} = \frac{A}{M} + \frac{B}{M}$$

2. (다항식)÷(다항식)의 꼴

두 다항식을 내림차순으로 정리한 다음 자연수의 나눗셈과 같은 방법으로 직접 나누어 몫과 나머지를 구한다. 이때 나머지의 차수가 나누는 식의 차수보다 작을 때까지 나눈다.

■ 다음 식을 계산하여라.

$$1. (a^4b^3 - 3a^2b^4) \div \left(-\frac{1}{2}ab^2\right)^2$$

$$2. \left(-\frac{1}{4}a^2b + ab^2 + 3ab\right) \div \frac{1}{4}ab$$

$$3. (4xy + xy^2 - 2x^2y) \div \left(-\frac{1}{3}xy\right)$$

$$4. (2ab^2 - 4a^2b + 6a) \div (-2a)$$

$$5. (8ab^2 + 4ab) \div 2a$$

$$6. \left(\frac{1}{2}x^4y^3 - \frac{1}{3}xy^2\right) \div \left(-\frac{1}{6}xy^2\right)$$

$$7. \{6ab^2 + (2a^2b)^2\} \div \frac{2}{3}ab^2$$

$$8. (24x^2 - 18x^3) \div \frac{6x^2}{5}$$

$$9. (x^5y^2 - 2x^2y^5) \div \left(-\frac{1}{2}xy\right)^2$$

$$10. (8x^2 - 4xy) \div \frac{1}{2}x$$

$$11. (5xyz + 10x^2y^2z) \div 5x$$

$$12. (2x^2z - 8x^2yz) \div 2xz$$

$$13. (6x^2yz - 15xz) \div 3xz$$

$$14. (12a^2bc^2 - 9ab^2c + 24abc^3) \div 3abc$$

$$15. (-12a^3b^2c^3 + 4ab^2c + 8ab^2c^2) \div (-4b^2c)$$

$$16. (x^2z^3 + xy^3z^2) \div \frac{x}{y^2z^4}$$

$$17. (4xyz - 6x^2yz) \div 2xy$$

$$18. (9a^3b^2c - abc - 3ab^2c) \div 3abc$$

$$19. (-4xyz + 12x^2y^2z) \div (-4xy)$$

$$20. \left(\frac{2}{3}x^2y - \frac{xy}{3} \right) \div \frac{2}{3}x$$

$$21. (-xy + y^2) \div \left(-\frac{1}{5}y \right) - (12x^2 + 15xy) \div 3x$$

$$22. 2x(4x - 7y) - (8x^2y^2 - 4x^3y) \div \frac{2}{3}xy$$

$$23. (9a^2 - 48ab) \div (-3a) - (36b^2 - 16ab) \div 4b$$

$$24. -3a^2(2ab^2 + b) - (12a^4b^2 - 8a^2b) \div 4a^2b$$

$$25. (9x^2 + 6xy) \div (-3x) - (12xy - 16y^2) \div 2y$$

■ 다음을 계산하여 몫과 나머지를 각각 구하여라.

$$26. (3x^3 - 11x^2 + 5) \div (3x - 2)$$

$$27. (3x^3 + 5x^2 + x - 7) \div (3x - 1)$$

$$28. (x^3 - 2x^2 + 5) \div (x - 3)$$

$$29. (2x^3 + x^2 - 7x + 4) \div (2x - 1)$$

$$30. (2x^3 + x^2 - 3x - 5) \div (x + 1)$$

$$31. (15x^3 - 23x^2 + 6) \div (3x - 1)$$

$$32. (2x^3 - 5x^2 + 4) \div (x^2 - 2x - 3)$$

$$33. (2x^3 + x^2 - 3x + 1) \div (x^2 - 2x + 3)$$

$$34. (3x^3 - 5x^2 + 4x - 7) \div (x^2 + 2)$$

35. $(-2x^3 + x^2 - x + 1) \div (x^2 + 1)$

36. $(2x^3 + 2x^2 - x + 4) \div (x^2 - 2x + 2)$

37. $(4x^3 + 5x^2 - 3x - 1) \div (x^2 + 2x - 3)$

38. $(2x^3 - 7x - 2) \div (x^2 + 3x + 1)$

39. $(2x^3 - 3x^2 + 4x + 1) \div (x^2 - x - 2)$

■ 다음 나눗셈을 하여 몫과 나머지를 구하여라.

40. $x + 1 \overline{) x^3 - 3x^2 + 4x + 1}$

41. $x + 1 \overline{) x^2 + 3x + 1}$

42. $x + 1 \overline{) x^3 + 2x^2 - 5x + 2}$

43. $-x - 1 \overline{) 2x^2 - 4x + 5}$

44. $3x + 2 \overline{) 6x^2 + 5x - 1}$

45. $x + 1 \overline{) -5x^2 - 3x - 1}$

46. $x + 2 \overline{) 4x^3 - x^2 + 5x + 6}$

47. $x - 2 \overline{) 2x^3 + 3x^2 + 4x + 5}$

48. $x - 1 \overline{) -2x^3 - 4x^2 + 3x + 2}$

49. $x^2 + x + 1 \overline{) x^3 + 2x^2 + 3x + 3}$

50. $x^2 - x + 2 \overline{) 2x^3 - x^2 + 3x - 8}$

51. $x^2 + 2x - 1 \overline{) x^3 + 5x^2 - 3x + 2}$

52. $2x^2 + 2x - 1 \overline{) 4x^3 + 2x^2 - 3x + 6}$

53. $x^2 - 2x - 1 \overline{) 4x^3 - x^2 - 2x + 6}$

02 / 다항식의 나눗셈의 성질

다항식 A 를 다항식 $B(B \neq 0)$ 로 나누었을 때의 몫을 Q , 나머지를 R 라고 하면

$A = BQ + R$ (단, R 의 차수는 B 의 차수보다 낮다.)가 성립한다.

특히 $R=0$ 일 때, A 는 B 로 나누어떨어진다고 한다.

	Q(몫)
B) A	
	BQ
	R(나머지)

■ 다음 두 다항식 A, B 에 대하여 A 를 B 로 나누었을 때의 몫 Q 와 나머지 R 를 구하여 $A = BQ + R$ 꼴로 나타내어라.

54. $A = 2x^2 - 5x + 3, B = x + 1$

55. $A = x^3 + 3x^2 - x + 2, B = x - 1$

56. $A = 2x^3 - 3x^2 + x - 3, B = x - 2$

57. $A = -x^2 + 2x + 5, B = x + 2$

58. $A = 2x^3 + x^2 - 7x + 7, B = 2x - 1$

59. $A = 2x^3 + x^2 - x + 1, B = x^2 + 1$

60. $A = 4x^3 + 3x + 2, B = x^2 - 2x + 3$

61. $A = 4x^3 - x + 2, B = 2x^2 + x + 2$

62. $A = 3x^3 + x^2 - 3x + 3, B = x^2 - x + 1$

63. $A = x^3 - 3x^2 + x - 3, B = x^2 - 2x - 1$

64. $A = x^3 + 2x^2 + x + 1, B = x^2 + x + 2$

65. $A = x^3 + 2x - 1, B = x^2 + 2x - 1$

66. $A = 3x^3 + 3x^2 - 2x + 2, B = x^2 - x + 2$

67. $A = 3x^3 - x^2 + 4x + 3, B = x^2 + 2$

68. $A = 2x^3 + 2x^2 - x + 1, B = x^2 - x + 1$



정답 및 해설

1) $\frac{4a^2}{b} - 12$

$$\begin{aligned} \Rightarrow (a^4b^3 - 3a^2b^4) \div \left(-\frac{1}{2}ab^2\right)^2 &= (a^4b^3 - 3a^2b^4) \div \left(\frac{1}{4}a^2b^4\right) \\ &= (a^4b^3 - 3a^2b^4) \times \frac{4}{a^2b^4} \\ &= \frac{4a^2}{b} - 12 \end{aligned}$$

2) $-a + 4b + 12$

$$\begin{aligned} \Rightarrow \left(-\frac{1}{4}a^2b + ab^2 + 3ab\right) \div \frac{1}{4}ab \\ = \left(-\frac{1}{4}a^2b + ab^2 + 3ab\right) \times \frac{4}{ab} = -a + 4b + 12 \end{aligned}$$

3) $6x - 3y - 12$

$$\begin{aligned} \Rightarrow (4xy + xy^2 - 2x^2y) \div \left(-\frac{1}{3}xy\right) \\ = (4xy + xy^2 - 2x^2y) \times \left(-\frac{3}{xy}\right) = 6x - 3y - 12 \end{aligned}$$

4) $-b^2 + 2ab - 3$

5) $4b^2 + 2b$

6) $-3x^3y + 2$

$$\begin{aligned} \Rightarrow \left(\frac{1}{2}x^4y^3 - \frac{1}{3}xy^2\right) \div \left(-\frac{1}{6}xy^2\right) \\ = \left(\frac{1}{2}x^4y^3 - \frac{1}{3}xy^2\right) \times \left(-\frac{6}{xy^2}\right) \\ = \frac{1}{2}x^4y^3 \times \left(-\frac{6}{xy^2}\right) - \frac{1}{3}xy^2 \times \left(-\frac{6}{xy^2}\right) \\ = -3x^3y + 2 \end{aligned}$$

7) $9 + 6a^3$

$$\begin{aligned} \Rightarrow \{6ab^2 + (2a^2b)^2\} \div \frac{2}{3}ab^2 \\ = (6ab^2 + 4a^4b^2) \times \frac{3}{2ab^2} = 9 + 6a^3 \end{aligned}$$

8) $20 - 15x$

$$\begin{aligned} \Rightarrow (24x^2 - 18x^3) \div \frac{6x^2}{5} \\ = (24x^2 - 18x^3) \times \frac{5}{6x^2} = 20 - 15x \end{aligned}$$

9) $4x^3 - 8y^3$

$$\begin{aligned} \Rightarrow (x^5y^2 - 2x^2y^5) \div \left(-\frac{1}{2}xy\right)^2 \\ = (x^5y^2 - 2x^2y^5) \div \frac{1}{4}x^2y^2 \\ = (x^5y^2 - 2x^2y^5) \times \frac{4}{x^2y^2} = 4x^3 - 8y^3 \end{aligned}$$

10) $16x - 8y$

$$\Rightarrow (8x^2 - 4xy) \div \frac{1}{2}x = (8x^2 - 4xy) \times \frac{2}{x} = 16x - 8y$$

11) $yz + 2xy^2z$

$$\begin{aligned} \Rightarrow (5xyz + 10x^2y^2z) \div 5x \\ = \frac{5xyz + 10x^2y^2z}{5x} \\ = \frac{5xyz}{5x} + \frac{10x^2y^2z}{5x} = yz + 2xy^2z \end{aligned}$$

12) $x - 4xy$

$$\begin{aligned} \Rightarrow (2x^2z - 8x^2yz) \div 2xz \\ = \frac{2x^2z}{2xz} - \frac{8x^2yz}{2xz} = x - 4xy \end{aligned}$$

13) $2xy - 5$

14) $4ac - 3b + 8c^2$

15) $3a^3c^2 - a - 2ac$

$$\begin{aligned} \Rightarrow (-12a^3b^2c^3 + 4ab^2c + 8ab^2c^2) \div (-4b^2c) \\ = \frac{-12a^3b^2c^3}{-4b^2c} + \frac{4ab^2c}{-4b^2c} + \frac{8ab^2c^2}{-4b^2c} = 3a^3c^2 - a - 2ac \end{aligned}$$

16) $xy^2z^7 + y^5z^6$

$$\begin{aligned} \Rightarrow (x^2z^3 + xy^3z^2) \div \frac{x}{y^2z^4} \\ = (x^2z^3 + xy^3z^2) \times \frac{y^2z^4}{x} = xy^2z^7 + y^5z^6 \end{aligned}$$

17) $2z - 3xz$

$$\begin{aligned} \Rightarrow (4xyz - 6x^2yz) \div 2xy \\ = \frac{4xyz - 6x^2yz}{2xy} \\ = \frac{4xyz}{2xy} - \frac{6x^2yz}{2xy} = 2z - 3xz \end{aligned}$$

18) $3a^2b - \frac{1}{3} - b$

$$\begin{aligned} \Rightarrow (9a^3b^2c - abc - 3ab^2c) \div 3abc \\ = \frac{9a^3b^2c}{3abc} - \frac{abc}{3abc} - \frac{3ab^2c}{3abc} = 3a^2b - \frac{1}{3} - b \end{aligned}$$

19) $z - 3xyz$

$$\begin{aligned} \Rightarrow (-4xyz + 12x^2y^2z) \div (-4xy) \\ = \frac{-4xyz}{-4xy} + \frac{12x^2y^2z}{-4xy} = z - 3xyz \end{aligned}$$

20) $xy - \frac{y}{2}$

$$\Rightarrow \left(\frac{2}{3}x^2y - \frac{xy}{3}\right) \div \frac{2}{3}x = \left(\frac{2}{3}x^2y - \frac{xy}{3}\right) \times \frac{3}{2x} = xy - \frac{y}{2}$$

21) $x - 10y$

$$\begin{aligned} \Rightarrow (-xy + y^2) \div \left(-\frac{1}{5}y\right) - (12x^2 + 15xy) \div 3x \\ = (-xy + y^2) \times \left(-\frac{5}{y}\right) - (12x^2 + 15xy) \times \frac{1}{3x} \end{aligned}$$

$$= 5x - 5y - 4x - 5y$$

$$= x - 10y$$

$$22) 14x^2 - 26xy$$

$$\Rightarrow 2x(4x - 7y) - (8x^2y^2 - 4x^3y) \div \frac{2}{3}xy$$

$$= 8x^2 - 14xy - (8x^2y^2 - 4x^3y) \times \frac{3}{2xy}$$

$$= 8x^2 - 14xy - 12xy + 6x^2$$

$$= 14x^2 - 26xy$$

$$23) a + 7b$$

$$\Rightarrow (9a^2 - 48ab) \div (-3a) - (36b^2 - 16ab) \div 4b$$

$$= -3a + 16b - 9b + 4a = a + 7b$$

$$24) -6a^3b^2 - 6a^2b + 2$$

$$\Rightarrow -3a^2(2ab^2 + b) - (12a^4b^2 - 8a^2b) \div 4a^2b$$

$$= -6a^3b^2 - 3a^2b - 3a^2b + 2 = -6a^3b^2 - 6a^2b + 2$$

$$25) -9x + 6y$$

$$\Rightarrow (9x^2 + 6xy) \div (-3x) - (12xy - 16y^2) \div 2y$$

$$= -3x - 2y - 6x + 8y = -9x + 6y$$

$$26) \text{ 몫 : } x^2 - 3x - 2, \text{ 나머지 : } 1$$

$$\Rightarrow \begin{array}{r} x^2 - 3x - 2 \\ 3x - 2 \overline{) 3x^3 - 11x^2 + 5} \\ \underline{3x^3 - 2x^2} \\ -9x^2 \\ \underline{-9x^2 + 6x} \\ -6x + 5 \\ \underline{-6x + 4} \\ 1 \end{array}$$

$$\therefore \text{ 몫 : } x^2 - 3x - 2, \text{ 나머지 : } 1$$

$$27) \text{ 몫 : } x^2 + 2x + 1, \text{ 나머지 : } -6$$

$$\Rightarrow 3x^3 + 5x^2 + x - 7 \text{ 을 } 3x - 1 \text{ 로 나누면}$$

$$3x^3 + 5x^2 + x - 7 = (3x - 1)(x^2 + 2x + 1) - 6 \text{ 이므로}$$

$$\text{몫은 } x^2 + 2x + 1 \text{ 이다.}$$

$$28) \text{ 몫 : } x^2 + x + 3, \text{ 나머지 : } 14$$

$$\Rightarrow \begin{array}{r} x^2 + x + 3 \\ x - 3 \overline{) x^3 - 2x^2 + 5} \\ \underline{x^3 - 3x^2} \\ x^2 - 3x \\ \underline{3x + 5} \\ 3x - 9 \\ \underline{14} \end{array}$$

$$\therefore \text{ 몫 : } x^2 + x + 3, \text{ 나머지 : } 14$$

$$29) \text{ 몫 : } x^2 + x - 3, \text{ 나머지 : } 1$$

$$\Rightarrow \begin{array}{r} x^2 + x - 3 \\ 2x - 1 \overline{) 2x^3 + x^2 - 7x + 4} \\ \underline{2x^3 - x^2} \\ 2x^2 - 7x \\ \underline{2x^2 - x} \\ -6x + 4 \\ \underline{-6x + 3} \\ 1 \end{array}$$

따라서 몫은 $x^2 + x - 3$ 이고, 나머지는 1 이다.

$$30) \text{ 몫 : } 2x^2 - x - 2, \text{ 나머지 : } -3$$

$$31) \text{ 몫 : } 5x^2 - 6x - 2, \text{ 나머지 : } 4$$

$$32) \text{ 몫 : } 2x - 1, \text{ 나머지 : } 4x + 1$$

$$33) \text{ 몫 : } 2x + 5, \text{ 나머지 : } x - 14$$

$$\Rightarrow \begin{array}{r} 2x + 5 \\ x^2 - 2x + 3 \overline{) 2x^3 + x^2 - 3x + 1} \\ \underline{2x^3 - 4x^2 + 6x} \\ 5x^2 - 9x + 1 \\ \underline{5x^2 - 10x + 15} \\ x - 14 \end{array}$$

$$\therefore \text{ 몫 : } 2x + 5, \text{ 나머지 : } x - 14$$

$$34) \text{ 몫 : } 3x - 5, \text{ 나머지 : } -2x + 3$$

$$\Rightarrow 3x^3 - 5x^2 + 4x - 7 \text{ 을 } x^2 + 2 \text{ 로 나누면}$$

$$3x^3 - 5x^2 + 4x - 7 = (x^2 + 2)(3x - 5) - 2x + 3 \text{ 이므로}$$

$$\text{몫은 } 3x - 5 \text{ 이고 나머지는 } -2x + 3 \text{ 이다.}$$

$$35) \text{ 몫 : } -2x + 1, \text{ 나머지 : } x$$

$$\Rightarrow \begin{array}{r} -2x + 1 \\ x^2 + 1 \overline{) -2x^3 + x^2 - x + 1} \\ \underline{-2x^3 - 2x^2} \\ x^2 + x + 1 \\ \underline{x^2 + 1} \\ x \end{array}$$

$$\therefore \text{ 몫 : } -2x + 1, \text{ 나머지 : } x$$

$$36) \text{ 몫 : } 2x + 6, \text{ 나머지 : } 7x - 8$$

$$\Rightarrow 2x^3 + 2x^2 - x + 4 \text{ 를 } x^2 - 2x + 2 \text{ 로 나누면}$$

$$2x^3 + 2x^2 - x + 4 = (2x + 6)(x^2 - 2x + 2) + 7x - 8 \text{ 에서}$$

$$\text{몫은 } 2x + 6 \text{ 이고 나머지는 } 7x - 8 \text{ 이다.}$$

$$37) \text{ 몫 : } 4x - 3, \text{ 나머지 : } 15x - 10$$

$$\Rightarrow \begin{array}{r} 4x - 3 \\ x^2 + 2x - 3 \overline{) 4x^3 + 5x^2 - 3x - 1} \\ \underline{4x^3 + 8x^2 - 12x} \\ -3x^2 + 9x - 1 \\ \underline{-3x^2 - 6x + 9} \\ 15x - 10 \end{array}$$

$$\therefore \text{ 몫 : } 4x - 3, \text{ 나머지 : } 15x - 10$$

$$38) \text{ 몫 : } 2x - 6, \text{ 나머지 : } 9x + 4$$

$$\begin{array}{r} 2x-6 \\ x^2+3x+1 \overline{) 2x^3 - 7x-2} \\ \underline{2x^3+6x^2+2x} \\ -6x^2-9x-2 \\ \underline{-6x^2-18x-6} \\ 9x+4 \end{array}$$

⇒

∴ 몫: $2x-6$, 나머지: $9x+4$

39) 몫: $2x-1$ 나머지: $7x-1$

$$\begin{aligned} \Rightarrow 2x^3-3x^2+4x+1 \text{을 } x^2-x-2 \text{로 나누면} \\ 2x^3-3x^2+4x+1 = (2x-1)(x^2-x-2) + 7x-1 \end{aligned}$$

40) 몫: x^2-4x+8 , 나머지: -7

⇒

$$\begin{array}{r} x^2-4x+8 \\ x+1 \overline{) x^3-3x^2+4x+1} \\ \underline{x^3+x^2} \\ -4x^2+4x \\ \underline{-4x^2-4x} \\ 8x+1 \\ \underline{8x+8} \\ -7 \end{array}$$

41) 몫: $x+2$, 나머지: -1

$$\begin{array}{r} x+2 \\ x+1 \overline{) x^2+3x+1} \\ \underline{x^2+x} \\ 2x+1 \\ \underline{2x+2} \\ -1 \end{array}$$

42) 몫: x^2+x-6 , 나머지: 8

$$\begin{array}{r} x^2+x-6 \\ x+1 \overline{) x^3+2x^2-5x+2} \\ \underline{x^3+x^2} \\ x^2-5x \\ \underline{x^2+x} \\ -6x+2 \\ \underline{-6x-6} \\ 8 \end{array}$$

43) 몫: $-2x+6$, 나머지: 11

$$\begin{array}{r} -2x+6 \\ -x-1 \overline{) 2x^2-4x+5} \\ \underline{2x^2+2x} \\ -6x+5 \\ \underline{-6x-6} \\ 11 \end{array}$$

44) 몫: $2x+\frac{1}{3}$, 나머지: $-\frac{5}{3}$

$$\begin{array}{r} 2x+\frac{1}{3} \\ 3x+2 \overline{) 6x^2+5x-1} \\ \underline{6x^2+4x} \\ x-1 \\ \underline{x+\frac{2}{3}} \\ -\frac{5}{3} \end{array}$$

45) 몫: $-5x+2$, 나머지: -3

$$\begin{array}{r} -5x+2 \\ x+1 \overline{) -5x^2-3x-1} \\ \underline{-5x^2-5x} \\ 2x-1 \\ \underline{2x+2} \\ -3 \end{array}$$

46) 몫: $4x^2-9x+23$, 나머지: -40

$$\begin{array}{r} 4x^2-9x+23 \\ x+2 \overline{) 4x^3-x^2+5x+6} \\ \underline{4x^3+8x^2} \\ -9x^2+5x \\ \underline{-9x^2-18x} \\ 23x+6 \\ \underline{23x+46} \\ -40 \end{array}$$

47) 몫: $2x^2+7x+18$, 나머지: 41

48) 몫: $-2x^2-6x-3$, 나머지: -1

$$\begin{array}{r} -2x^2-6x-3 \\ x-1 \overline{) -2x^3-4x^2+3x+2} \\ \underline{-2x^3+2x^2} \\ -6x^2+3x \\ \underline{-6x^2+6x} \\ -3x+2 \\ \underline{-3x+3} \\ -1 \end{array}$$

49) 몫: $x+1$ 나머지: $x+2$

$$\begin{array}{r} x+1 \Leftarrow \text{몫} \\ x^2+x+1 \overline{) x^3+2x^2+3x+3} \\ \underline{x^3+x^2+x} \\ x^2+2x+3 \\ \underline{x^2+x+1} \\ x+2 \Leftarrow \text{나머지} \end{array}$$

50) 몫: $2x+1$, 나머지: -10

$$\begin{aligned} \Rightarrow 2x^3-x^2+3x-8 \text{을 } x^2-x+2 \text{로 나누면} \\ 2x^3-x^2+3x-8 = (2x+1)(x^2-x+2) - 10 \end{aligned}$$

51) 몫: $x+3$ 나머지: $-8x+5$

$$\begin{array}{r} \Rightarrow \quad \frac{x+3}{x^2+2x-1} \leftarrow \text{몫} \\ \underline{x^3+5x^2-3x+2} \\ x^3+2x^2-x \\ \underline{3x^2-2x+2} \\ 3x^2+6x-3 \\ \underline{-8x+5} \leftarrow \text{나머지} \end{array}$$

52) 몫: $2x-1$ 나머지: $x+5$

$$\begin{array}{r} \Rightarrow \quad \frac{2x-1}{2x^2+2x-1} \leftarrow \text{몫} \\ \underline{4x^3+2x^2-3x+6} \\ 4x^3+4x^2-2x \\ \underline{-2x^2-x+6} \\ -2x^2-2x+1 \\ \underline{x+5} \leftarrow \text{나머지} \end{array}$$

53) 몫: $4x+7$ 나머지: $16x+13$

$$\begin{array}{r} \Rightarrow \quad \frac{4x+7}{x^2-2x-1} \leftarrow \text{몫} \\ \underline{4x^3-x^2-2x+6} \\ 4x^3-8x^2-4x \\ \underline{7x^2+2x+6} \\ 7x^2-14x-7 \\ \underline{16x+13} \leftarrow \text{나머지} \end{array}$$

54) $2x^2-5x+3=(x+1)(2x-7)+10$

$$\begin{array}{r} \Rightarrow \quad \frac{2x-7}{x+1} \leftarrow \text{몫} \\ \underline{2x^2+2x} \leftarrow 2x \times (x+1) \\ -7x+3 \\ \underline{-7x-7} \leftarrow -7 \times (x+1) \\ 10 \leftarrow \text{나머지} \end{array}$$

$\therefore 2x^2-5x+3=(x+1)(2x-7)+10$

55) $x^3+3x^2-x+2=(x-1)(x^2+4x+3)+5$

$$\begin{array}{r} \Rightarrow \quad \frac{x^2+4x+3}{x-1} \leftarrow \text{몫} \\ \underline{x^3+3x^2-x+2} \\ x^3-x^2 \\ \underline{4x^2-x+2} \\ 4x^2-4x \\ \underline{3x+2} \\ 3x-3 \\ \underline{5} \end{array}$$

$\therefore x^3+3x^2-x+2=(x-1)(x^2+4x+3)+5$

56) $2x^3-3x^2+x-3=(x-2)(2x^2+x+3)+3$

$$\begin{array}{r} \Rightarrow \quad \frac{2x^2+x+3}{x-2} \leftarrow \text{몫} \\ \underline{2x^3-3x^2+x-3} \\ 2x^3-4x^2 \\ \underline{x^2+x-3} \\ x^2-2x \\ \underline{3x-3} \\ 3x-6 \\ \underline{3} \end{array}$$

$\therefore 2x^3-3x^2+x-3=(x-2)(2x^2+x+3)+3$

57) $-x^2+2x+5=(x+2)(-x+4)-3$

$$\begin{array}{r} \Rightarrow \quad \frac{-x+4}{x+2} \leftarrow \text{몫} \\ \underline{-x^2+2x+5} \\ -x^2-2x \\ \underline{4x+5} \\ 4x+8 \\ \underline{-3} \end{array}$$

$\therefore -x^2+2x+5=(x+2)(-x+4)-3$

58) $2x^3+x^2-7x+7=(2x-1)(x^2+x-3)+4$

$$\begin{array}{r} \Rightarrow \quad \frac{x^2+x-3}{2x-1} \leftarrow \text{몫} \\ \underline{2x^3+x^2-7x+7} \\ 2x^3-x^2 \\ \underline{2x^2-7x} \\ 2x^2-x \\ \underline{-6x+7} \\ -6x+3 \\ \underline{4} \end{array}$$

$\therefore 2x^3+x^2-7x+7=(2x-1)(x^2+x-3)+4$

59) $2x^3+x^2-x+1=(x^2+1)(2x+1)-3x$

$$\begin{array}{r} \Rightarrow \quad \frac{2x+1}{x^2+1} \leftarrow \text{몫} \\ \underline{2x^3+x^2-x+1} \\ 2x^3+2x \\ \underline{x^2-3x+1} \\ x^2+1 \\ \underline{-3x} \end{array}$$

$\therefore 2x^3+x^2-x+1=(x^2+1)(2x+1)-3x$

60) $(x^2-2x+3)(4x+8)+7x-22$

$\Rightarrow A$ 를 B 로 나누면

$4x^3+3x+2=(x^2-2x+3)(4x+8)+7x-22$ 이므로
 $Q=4x+8 \quad R=7x-22$ 이다.

61) $4x^3-x+2=(2x^2+x+2)(2x-1)+(-4x+4)$

$$\begin{array}{r} \Rightarrow \quad \frac{2x-1}{2x^2+x+2} \leftarrow \text{몫} \\ \underline{4x^3-x+2} \\ 4x^3+2x^2+4x \\ \underline{-2x^2-5x+2} \\ -2x^2-x-2 \\ \underline{-4x+4} \end{array}$$

$\therefore 4x^3-x+2=(2x^2+x+2)(2x-1)+(-4x+4)$

62) $(x^2-x+1)(3x+4)-2x-1$

$\Rightarrow A$ 를 B 로 나누면

$3x^3+x^2-3x+3=(x^2-x+1)(3x+4)-2x-1$

63) $x^3-3x^2+x-3=(x^2-2x-1)(x-1)-4$

$$\begin{array}{r} \Rightarrow \quad \frac{x-1}{x^2-2x-1} \leftarrow \text{몫} \\ \underline{x^3-3x^2+x-3} \\ x^3-2x^2-x \\ \underline{-x^2+2x-3} \\ -x^2+2x+1 \\ \underline{-4} \end{array}$$

$\therefore x^3-3x^2+x-3=(x^2-2x-1)(x-1)-4$

$$64) (x^2+x+2)(x+1)+(-2x-1)$$

$$\begin{array}{r} \Rightarrow \quad \begin{array}{r} x+1 \quad \Leftarrow Q \\ x^2+x+2 \overline{) x^3+2x^2+x+1} \\ \underline{x^3+x^2+2x} \\ x^2-x+1 \\ \underline{x^2+x+2} \\ -2x-1 \Leftarrow R \end{array} \end{array}$$

$$\therefore x^3+2x^2+x+1=(x^2+x+2)(x+1)+(-2x-1)$$

$$65) (x^2+2x-1)(x-2)+7x-3$$

$$\begin{array}{r} \Rightarrow \quad \begin{array}{r} x-2 \quad \Leftarrow Q \\ x^2+2x-1 \overline{) x^3+2x^2-x-1} \\ \underline{x^3+2x^2-x} \\ -2x^2+3x-1 \\ \underline{-2x^2-4x+2} \\ 7x-3 \Leftarrow R \end{array} \end{array}$$

$$\therefore x^3+2x-1=(x^2+2x-1)(x-2)+7x-3$$

$$66) (x^2-x+2)(3x+6)-2x-10$$

$$\begin{array}{r} \Rightarrow \quad \begin{array}{r} 3x+6 \quad \Leftarrow Q \\ x^2-x+2 \overline{) 3x^3+3x^2-2x+2} \\ \underline{3x^3-3x^2+6x} \\ 6x^2-8x+2 \\ \underline{6x^2-6x+12} \\ -2x-10 \Leftarrow R \end{array} \end{array}$$

$$\therefore 3x^3+3x^2-2x+2=(x^2-x+2)(3x+6)-2x-10$$

$$67) 3x^3-x^2+4x+3=(x^2+2)(3x-1)-2x+5$$

$$\begin{array}{r} \begin{array}{r} 3x-1 \\ x^2+2 \overline{) 3x^3-x^2+4x+3} \\ \underline{3x^3+6x} \\ -x^2-2x+3 \\ \underline{-x^2-2x+2} \\ -2x+5 \end{array} \end{array}$$

$$\therefore 3x^3-x^2+4x+3=(x^2+2)(3x-1)-2x+5$$

$$68) (x^2-x+1)(2x+4)+x-3$$

$$\begin{array}{r} \Rightarrow \quad \begin{array}{r} 2x+4 \quad \Leftarrow Q \\ x^2-x+1 \overline{) 2x^3+2x^2-x+1} \\ \underline{2x^3-2x^2+2x} \\ 4x^2-3x+1 \\ \underline{4x^2-4x+4} \\ x-3 \Leftarrow R \end{array} \end{array}$$

$$\therefore 2x^3+2x^2-x+1=(x^2-x+1)(2x+4)+x-3$$