POLYNOMIAL OPERATIONS PRACTICE

Add the following polynomials (Write answers in descending order):
1. $(7j^3 - 2) + (5j^3 - j - 3)$ $12j^3 - j - 5$
2. $(8a^5 - 4) + (3a^5 + a - 2)$ $11a^5 + a - 6$
3. $(6m^5 + 1) + (2m^5 + 9m - 1)$ $8m^5 + 9m$
4. $(3m^5 + 1) + (9m^5 + 3m - 2)$ $12m^5 + 3m - 1$
5. $(-5x^2 - x + 4) + (-3x^2 - 5x + 2)$ $-8x^2 - 6x + 6$
6. $(-4x + 4x^3 + 7) + (3x^3 - 9 - 3x)$ $7x^3 - 7x - 2$
7. $(3x^2 - 2x + 1) + (-x^2 + 3x + 1)$ $2x^2 + x + 2$

Subtract the following polynomials (Write answers in descending order):
8. $(-x^2 + x - 4) - (3x^2 - 8x - 2)$ $-4x^2 - 7x - 2$
9. $(8x^2 - 3x) - (5x - 5 - 8x^2)$ $16x^2 - 8x + 5$
10. $(-x^2 - 5x - 3) - (-7x^2 - 8x - 8)$ $6x^2 + 3x + 5$
11. $(-2x^3 + x) - (7x - 3 - 7x^3)$ $5x^3 - 6x + 3$
12. $(3x^3 + 3x^2 + 9) - (5x^3 - 7x^2 + 6x - 9)$ $-2x^3 + 10x^2 - 6x + 18$
13. $(5x^3 + 5x^2 + 5) - (6x^3 - 6x^2 + 8x - 5)$ $-x^3 + 11x^2 - 8x + 10$
14. $(5x^3 + 3x^2 + 5) - (7x^3 - 9x^2 + 8x - 5)$ $-2x^3 + 12x^2 - 8x + 10$

Multiply the following polynomials:
15. $(8x^3y^2)(-3x^2y^3)$ $-24x^5y^5$
16. $(-9x^3y)(-8x^2y^3)$ $72x^5y^4$
17. $j^2(k^5j^3)$ k^5j^5
18. $a^4(b^4a^6)$ b^4a^{10}
19. $2x^3(9x^2 + 5y)$ $18x^5 + 10x^3y$
20. $5x^3(2x + 4y)$ $10x^4 + 20x^3y$
21. $5m^2(3m^3 + 5m^2 - 4m + 6)$ $15m^5 + 25m^4 - 20m^3 + 6m^2$
22. $-4x^2y(x^2 + 7xy - 6y^3)$ $-4x^4y - 28x^3y^2 + 24xy^4$
23. $(x + 6)(x + 2)$ $x^2 + 8x + 12$
24. $(x - 6)(x + 9)$ $x^2 + 3x - 54$
25. $(4x - 3)(3x - 5)$ $12x^2 - 29x + 15$
26. $(x - 8)(x - 7)$ $x^2 - 15x + 56$
27. $(6a + 1)(5a + 2)$ $30a^2 + 17a + 2$
28. $(5x + 4y)(2x + 5y)$ $10x^2 + 33xy + 20y^2$
29. $(2x + y)(4x - 9y)$ $8x^2 - 14xy - 9y^2$
30. $(6r - 5)(6r + 1)$ $36r^2 - 24r - 5$
31. $(6c + 7)(6c - 7)$ $36c^2 - 49$
32. $(3x + 5y)^2$ $9x^2 + 30xy + 25y^2$
33. $(x - 2)(x^2 - x + 3)$ $x^3 - 3x^2 + x - 6$
34. $(2x - 5)(5x^2 + 4x + 7)$ $10x^3 - 17x^2 - 6x - 35$

Divide the following polynomials:
35. $\dfrac{9x-6}{3}$ $3x - 2$
36. $\dfrac{4x-7}{2}$ $2x - \frac{7}{2}$
37. $\dfrac{x^2-3x+5}{x}$ $x - 3 + \frac{5}{x}$
38. $\dfrac{5x^2-25x+2}{-5x}$ $-x + 5 - \frac{2}{5x}$
39. $\dfrac{4x^{10}-5x^9-20x^4}{4x^2}$ $x^8 - \frac{5}{4}x^7 - 5x^2$
40. $(-x^6 + x^5 + 7x^2 - 9) \div x^4$ $-x^2 + x + \frac{7x^2-9}{x^4}$
41. $(x^2 + 2x + 6) \div x$ $x + 2 + \frac{6}{x}$
42. $(3x^2 - 15x + 5) \div (-3x)$ $-x + 5 - \frac{5}{3x}$
43. $(2x^{11} - 5x^7 - 10x^6) \div 2x^3$ $x^8 - \frac{5x^4}{2} - 5x^3$
44. $(-2x^6 + 5x^5 + 9x^2 + 2) \div x^4$ $-2x^2 + 5x + \frac{9x^2+2}{x^4}$
45. $\dfrac{f^3+64}{f+4}$ $f^2 - 4f + 16$
46. $\dfrac{4p-2+3p^2}{p-1}$ $3p + 7 - \frac{5}{p-1}$
47. $\dfrac{3m-4+2m^2}{m+5}$ $2m - 7 + \frac{31}{m+5}$
48. $\dfrac{j^3-64}{j-4}$ $j^2 + 4j + 16$
49. $\dfrac{-5p+4p^2+4}{p-2}$ $4p - 5 + \frac{10}{p-2}$ ($p-2$)
50. $(4p + 3p^2 - 1) \div (p + 4)$ $3p - 8 + \frac{31}{p+4}$
51. $(20x^2 - 13x + 2) \div (5x - 2)$ $4x - 1$
52. $(12x^2 - 6x^3 - 3 - 9x) \div (3x - 3)$ $-2x^2 + 2x - 1 - \frac{6}{3x-3}$
53. $(8x^2 - 2x - 3) \div (2x + 1)$ $4x - 3$
54. $(-3x^2 + 6x^3 - 4 - x) \div (2x + 1)$ $3x^2 - 3x + 1 - \frac{5}{2x+1}$