Operations with Polynomials

Emphasis on Multiply Polynomials

Multiply each of the following:

1. $x(5x+2)$

$5x^2+2x$

2. $-3x(-2x+8)$

$6x^2-24x$

3. $2x(2x^2-5x+7)$

$4x^3-10x^2+14x$

4. $5x^2(6x+2)$

$30x^3+10x^2$

5. $(3q-8)(-9q+2)$

$3q(-9q+2)-8(-9q+2)$

$-27q^2+6q+72q-16$

$-27q^2+78q-16$

6. $(-2x-7)(-5x-4)$

$-2x(-5x-4)-7(-5x-4)$

$10x^2+8x+35x+28$

$10x^2+43x+28$

7. $(w-6)(4w-1)$

$w(4w-1)-6(4w-1)$

$4w^2-w-24w+6$

$4w^2-25w+6$

8. $(2t+1)(3t-2)$

$2t(3t-2)+1(3t-2)$

$6t^2-4t+3t-2$

$6t^2-t-2$

9. $(b-2)(2b-1)$

$b(2b-1)-2(2b-1)$

$2b^2-b-4b+2$

$2b^2-5b+2$

10. $(3p+1)(p+3)$

$3p(p+3)+1(p+3)$

$3p^2+9p+1p+3$

$3p^2+10p+3$

11. $(a-6)(2a+5)(a+1)$

$a(2a+5)-6(2a+5)$

$2a^2+5a-12a-30$

$(2a^2-7a-30)(a+1)$

$2a^2(a+1)-7a(a+1)-30(a+1)$

$2a^3+2a^2-7a^2-7a-30a-30$

$2a^3-5a^2-37a-30$

12. $(z-4)(-z+2)(z+8)$

$z(-z+2)-4(-z+2)$

$-z^2+2z+4z-8$

$(-z^2+6z-8)(z+8)$

$-z^2(z+8)+6z(z+8)-8(z+8)$

$-z^3-8z^2+6z^2+48z-8z-64$

$-z^3-2z^2+40z-64$

13. $(x+1)(x-7)(x+3)$

$x(x-7)+1(x-7)$

$x^2-7x+1x-7$

$(x^2-6x-7)(x+3)$

$x^2(x+3)-6x(x+3)-7(x+3)$

$x^3+3x^2-6x^2-18x-7x-21$

$x^3-3x^2-25x-21$

14. $(x+4)(x-6)(x-5)$

$x(x-6)+4(x-6)$

$x^2-6x+4x-24$

$(x^2-2x-24)(x-5)$

$x^2(x-5)-2x(x-5)-24(x-5)$

$x^3-5x^2-2x^2+10x-24x+120$

$x^3-7x^2-14x+120$

15. $(w+4)(w^2+6w-11)$

$w(w^2+6w-11)+4(w^2+6w-11)$

$w^3+6w^2-11w+4w^2+24w-44$

$w^3+10w^2+13w-44$

16. $(2a-3)(a^2-10a-2)$

$2a(a^2-10a-2)-3(a^2-10a-2)$

$2a^3-20a^2-4a-3a^2+30a+6$

$2a^3-23a^2+26a+6$

17. $(5c^2-4)(2c^2+c-3)$

$5c^2(2c^2+c-3)-4(2c^2+c-3)$

$10c^4+5c^3-15c^2-8c^2-4c+12$

$10c^4+5c^3-23c^2-4c+12$

18. $(-x^2+4x+1)(x^2-8x+3)$

$-x^2(x^2-8x+3)+4x(x^2-8x+3)+1(x^2-8x+3)$

$-x^4+8x^3-3x^2+4x^3-32x^2+12x+x^2-8x+3$

$-x^4+12x^3-34x^2+4x+3$

19. $(-d^2+4d+3)(3d^2-7d+6)$

$-d^2(3d^2-7d+6)+4d(3d^2-7d+6)+3(3d^2-7d+6)$

$-3d^4+7d^3-6d^2+12d^3-28d^2+24d+9d^2-21d+18$

$-3d^4+19d^3-25d^2+3d+18$

20. $(3y^2+6y-1)(4y^2-11y-5)$

$3y^2(4y^2-11y-5)+6y(4y^2-11y-5)-1(4y^2-11y-5)$

$12y^4-33y^3-15y^2+24y^3-66y^2-30y-4y^2+11y+5$

$12y^4-9y^3-85y^2-19y+5$