

1)  $(5x - 2)(3x + 4)$

$15x^2 + 20x - 6x - 8$

$15x^2 + 14x - 8$

2)

$(y - 7)(y^2 - 4y + 3)$

$y^3 - 4y^2 + 3y - 7y^2 + 28y - 21$

$y^3 - 11y^2 + 31y - 21$

3a)

$9r^4(-2r^3)$

$-18r^7$

3b)

$-7a^5b(8a^4b^2)$

$-56a^9b^3$

4)  $(m - 8)^2$

$(m - 8)(m - 8)$

$m^2 - 8m - 8m + 64$

$m^2 - 16m + 64$

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

$-20n^5 + 24n^4 - 4n^3$

6)  $(9x + 1)(3x + 2)$

$27x^2 + 18x + 3x + 2$

$27x^2 + 21x + 2$

7)

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

$20x^4 - 8x^3 + 15x^3 - 6x^2$

$2x^3[20x^2 + 7x - 6]$

$40x^5 + 14x^4 - 12x^3$

8)  $-5x^7(-2x + 11)$

$10x^8 - 55x^7$

9)  $(x + y)^2$

$(x + y)(x + y)$

$x^2 + xy + xy + y^2$

$x^2 + 2xy + y^2$

10)  $4n^3(7n^2 - n - 9)$

$28n^5 - 4n^4 - 36n^3$

11a)

$2x^5y^3(-8xy^4)$

$-16x^6y^7$

11b)

$-7r^2(-r^3)$

$7r^5$

12)  $(3k^2 + 5)(7k + 8)$

$21k^3 + 24k^2 + 35k + 40$

13)

$(x + 3)(x^2 - 4x + 10)$

$x^3 - 4x^2 + 10x + 3x^2 - 12x + 30$

$x^3 - x^2 - 2x + 30$

14)  $(a - b)(a + b)$

$a^2 + ab - ab + b^2$

$a^2 + b^2$

15)  $3r^2(7r - 4)(r - 1)$

$7r^2 - 7r - 4r + 4$   
 $3r^2[7r^2 - 11r + 4]$

$21r^4 - 33r^3 + 12r^2$

As with #7, you can multiply in a different order, but your final answer should match.

16)  $(y - 8)(y + 8)$

$y^2 + 8y - 8y - 64$

$y^2 - 64$

17)  $4x^3(x + 7)$

$4x^4 + 28x^3$

18)  $(m + 5)^2$

$(m + 5)(m + 5)$

$m^2 + 5m + 5m + 25$

$m^2 + 10m + 25$

19)  $-n^3(5n^2 - 6n + 1)$

$-5n^5 + 6n^4 - n^3$

20a)

$3p^4q^6(2pq^{10})$

$6p^5q^{16}$

20b)

$8k^7(-k^3)$

$-8k^{10}$

21)  $(3y - 1)(5y + 2)$

$15y^2 + 6y - 5y - 2$

$15y^2 + y - 2$

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

$(8x^4 + 6x^3)(5x - 2)$

$40x^5 - 16x^4 + 30x^4 - 12x^3$

$40x^5 + 14x^4 - 12x^3$

The above order is my preference, but you can distribute the first term to the first set of parentheses, and then proceed from there.