Principles of Algebra Name/Date Clee / Today

WS 12D.2 - Factoring by the First Three Methods

Factor each polynomial by GCF, Difference of Two Squares, or Reverse FOIL.

1. $10x^3y^2 - 7xy^4$ — GCF

$= xy^2(10x^2 - 7y^2)$

2. $r^2 - 4$ — Difference of Two Squares

$r \cdot r \quad a \cdot 2$

$= (r+2)(r-2)$

3. $x^2 - 14x + 49$ — Reverse FOIL

F O I L

$= (x-7)(x-7)$ OR $(x-7)^2$

4. $25y^2 + 40y + 16$ — Reverse FOIL

F O I L

$= (5y+4)(5y+4)$ OR $(5y+4)^2$

5. $14m^5n^6p^3 - 16m^7n^3 + 8m^4n^{10}$ — GCF

$= 2m^4n^3(7mn^3p^3 - 8m^3 + 4n^7)$

6. $121 - 100x^6$ — Difference of Two Squares

$11 \cdot 11 \quad 10x^3 \cdot 10x^3$

$= (11 + 10x^3)(11 - 10x^3)$

7. $4a^3 + 8a^2 - 16a$ — GCF

$= 4a(a^2 + 2a - 4)$

8. $z^2 + 16z + 64$ — Reverse FOIL

F O I L

$= (z+8)(z+8)$ OR $(z+8)^2$

9. $225x^{10} - 4y^2$ — Difference of Two Squares

$15x^5 \cdot 15x^5 \quad 2y \cdot 2y$

$= (15x^5 + 2y)(15x^5 - 2y)$

10. $9m^2 + 30mn + 25n^2$ — Reverse FOIL

F O I L

$= (3m+5n)(3m+5n)$ OR $(3m+5n)^2$

11. $p^2 + 28p + 196$ — Reverse FOIL

F O I L

$= (p+14)(p+14)$ OR $(p+14)^2$

12. $m^{10} - n^{12}$ — Difference of Two Squares

$m^5 \cdot m^5 \quad n^6 \cdot n^6$

$= (m^5 + n^6)(m^5 - n^6)$

13. $9x^4y^7 - 15x^5y^5 + 3x^2y$ — GCF

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

14. $49k^4 + 14k^2 + 1$ — Reverse FOIL

F O I L

$= (7k^2+1)(7k^2+1)$ OR $(7k^2+1)^2$

15. $24j^9k^{10} + 12j^{12}k^7 - 36j^8k^{15} + 48j^{15}k^{11}$ — GCF

$= 12j^8k^7(2jk^3 + j^4 - 3k^8 + 4j^7k^4)$

16. $144x^2 - 264x + 121$ — Reverse FOIL

F O I L

$= (12x-11)(12x-11)$ OR $(12x-11)^2$

17. $16z^2 - 25$ — Difference of Two Squares

$4z \cdot 4z \quad 5 \cdot 5$

$= (4z+5)(4z-5)$

18. $16z^2 + 36$ — GCF

$= 4(4z^2 + 9)$

19. $81r^2 - 234rt + 169t^2$ — Reverse FOIL

F O I L

$= (9r-13t)(9r-13t)$ OR $(9r-13t)^2$

20. $x^2y^2 + 12xyz + 36z^2$ — Reverse FOIL

F O I L

$= (xy+6z)(xy+6z)$ OR $(xy+6z)^2$