Principles of Algebra Name/Date Clee / Today

ALL WORK CAN BE DONE ON THIS SHEET

WS 12C.1 – Factoring by Difference of Two Squares

Factor each binomial by the Difference of Two Squares Method. If a binomial does not factor, write "prime."

1. $y^2 - 121$
   $y \; y \; 11 \; 11$
   $= (y+11)(y-11)$

2. $121 - y^2$
   $11 \; 11 \; y \; y$
   $= (11+y)(11-y)$

3. $x^2 - 100$
   $x \; x \; 10 \; 10$
   $= (x+10)(x-10)$

4. $x^2 + 100$
   $x \; x \; 10 \; 10$
   not a difference
   prime

5. $m^6 - 49$
   $m^3 \; m^3 \; 7 \; 7$
   $= (m^3+7)(m^3-7)$

6. $n^{10} - 25$
   $n^5 \; n^5 \; 5 \; 5$
   $= (n^5+5)(n^5-5)$

7. $n^{30} - 1$
   $n^{15} \; n^{15} \; 1 \; 1$
   $= (n^{15}+1)(n^{15}-1)$

8. $4 - a^8$
   $2 \; 2 \; a^4 \; a^4$
   $= (2+a^4)(2-a^4)$

9. $x^4y^2 - 81$
   $x^2y \; x^2y \; 9 \; 9$
   $= (x^2y+9)(x^2y-9)$

10. $25g^2 - 16$
    $5g \; 5g \; 4 \; 4$
    $= (5g+4)(5g-4)$

11. $4z^2 - 9$
    $2z \; 2z \; 3 \; 3$
    $= (2z+3)(2z-3)$

12. $p^9 - 64$
    not a perfect square
    $8 \; 8$
    prime

13. $144w^2 - 121r^{12}$
    $12w \; 12w \; 11r^6 \; 11r^6$
    $= (12w+11r^6)(12w-11r^6)$

14. $1 - x^{14}y^{20}$
    $1 \; 1 \; x^7y^{10} \; x^7y^{10}$
    $= (1+x^7y^{10})(1-x^7y^{10})$

15. $k^2 + 4$
    not a difference
    $k \; k \; 2 \; 2$
    prime

16. $j^{60}k^{50} - 9x^{100}$
    $j^{30}k^{25} \; j^{30}k^{25} \; 3x^{50} \; 3x^{50}$
    $= (j^{30}k^{25}+3x^{50})(j^{30}k^{25}-3x^{50})$

17. $9n^4 - 49m^2$
    $3n^2 \; 3n^2 \; 7m \; 7m$
    $= (3n^2+7m)(3n^2-7m)$

18. $36x^{36} - y^2z^8$
    $6x^{18} \; 6x^{18} \; yz^4 \; yz^4$
    $= (6x^{18}+yz^4)(6x^{18}-yz^4)$

19. $64x^2 - 81y$
    $8x \; 8x$
    not perfect square
    prime

20. $a^2 - b^2$
    $a \; a \; b \; b$
    $= (a+b)(a-b)$

Factor each polynomial by Difference of Two Squares or by GCF. If a binomial does not factor, write "prime."

21. $9x^2 + 36$
    GCF
    $= 9(x^2+4)$

22. $14j^3 - 28j^2$
    GCF
    $= 14j^2(j-2)$

23. $121y^4 - 100z^{100}$
    Difference of Two Squares
    $11y^2 \; 11y^2 \; 10z^{50} \; 10z^{50}$
    $= (11y^2+10z^{50})(11y^2-10z^{50})$

24. $10x^3y^5 - 20x^4y^3 + 15x^5y^2$
    GCF
    $= 5x^3y^2(2y^3 - 4xy + 3x^2)$

25. $18j^{10}k^8m^{15} - 60j^{12}k^6m^{10} + 6j^8k^5m^9$
    GCF
    $= 6j^8k^5m^9(3j^2k^3m^6 - 10j^4km + 1)$