Principles of Algebra Name/Date Clee / Today

ALL PROBLEMS CAN BE COMPLETED ON THIS WORKSHEET

WS 13B.3 – Even More Factoring Completely

#1-10, Factor each polynomial completely until only prime factors remain.

1. $6a^2 - 6$ ← GCF
   $= 6(a^2-1)$ ← Difference of Two Squares
   $= \boxed{6(a+1)(a-1)}$

2. $27p^3 - 108pq^2$ ← GCF
   $= 27p(p^2-4q^2)$ ← Difference of Two Squares
   $= \boxed{27p(p+2q)(p-2q)}$

3. $3z^2 - 6z - 24$ ← GCF
   $= 3(z^2-2z-8)$ ← Reverse FOIL
   $= \boxed{3(z-4)(z+2)}$

4. $12r^2 - 45r - 12$ ← GCF
   $= 3(4r^2-15r-4)$ ← Reverse FOIL
   $= \boxed{3(4r+1)(r-4)}$

5. $-6y^2 + 36y + 96$ ← GCF
   $= -6(y^2-6y-16)$ ← Reverse FOIL
   $= \boxed{-6(y-8)(y+2)}$

6. $27m^3 + 36m^2 + 12m$ ← GCF
   $= 3m(9m^2+12m+4)$ ← Reverse FOIL
   $= \boxed{3m(3m+2)(3m+2)}$

7. $45j^4k^2 + 45j^3k^2 - 20j^2k^2$ ← GCF
   $= 5j^2k^2(9j^2+9j-4)$ ← Reverse FOIL
   $= \boxed{5j^2k^2(3j+4)(3j-1)}$

8. $18a^5b^3 - 60a^4b^4 + 50a^3b^5$ ← GCF
   $= 2a^3b^3(9a^2-30ab+25b^2)$ ← Reverse FOIL
   $= \boxed{2a^3b^3(3a-5b)(3a-5b)}$

9. $2m^5 - 68m^3 + 450m$ ← GCF
   $= 2m(m^4-34m^2+225)$ ← Reverse FOIL
   $= 2m(m^2-25)(m^2-9)$ ← Difference of Two Squares
   $= \boxed{2m(m+5)(m-5)(m+3)(m-3)}$

10. $3r^9 - 27r$ ← GCF
    $= 3r(r^8-9)$ ← Difference of Two Squares
    $= \boxed{3r(r^4+3)(r^4-3)}$