[factoring polynomials]

1. Expand and simplify:

   $3(x-3)(3x-4) - 2(2x-7)^2$

2. Factor fully:

   a. $2m^2n^2 - 4m^2n^3 - 10m^3n^2$
   b. $9x(x+7) - (x+2)(x+7)$
   c. $2m^2 - 25a - 5m + 10am$
   d. $x^2 - 14xy - 72y^2$
   e. $36a^2 - 84a + 49$
   f. $125x^3 + 8$

3. Factor fully:
   a. $3p^2 - 19pq - 14q^2$
   b. $16x^2 - 81y^4$
   c. $5x^3 - 80xy^2$
   d. $x^6 - y^6$
   e. $16x^2 - 24x + 9 - (2x+3y)^2$
   f. $(x^2+3x)^2 - 8(x^2+3x) - 20$

4.
   a. Divide $(4x^2 + 6x^3 + 20)$ by $(x+2)$. Write a **division statement**.
   b. Find k if $(x-3)$ is a factor of $x^3 - kx^2 + 5x + 5$

5. Use the Factor Theorem to factor:

   $2m^3 - m^2 - 13m - 6$

worksheets