Algebra II
6-2 to 6-5 Worksheet A15   Name _____

Determine if the following can be factored (or rewritten) so that it contains a quadratic (*yes* or *no*).

1) _____ $x^{22} - 3x^{11} - 18$ 2) _____ $8y^{3/7} + 5y^{3/49} - 12$ 3) _____ $r^5 + 7r^3$

Solve each equation by *first* factoring it.

4) $8h^3 - 125 = 0$ 5) $x^5 - 13x^3 + 40x = 0$

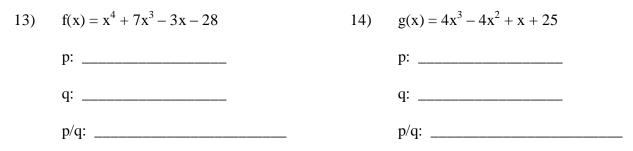6) $2y^4 - 3y^2 - 5 = 0$ 7) $x^3 - 3x^2 - 4x + 12 = 0$

Given an imaginary root, according to the Complex Conjugates Theorem, give one other root that must exist.

8) $2 - 14i$, _____   9) $-1 + 3i$, _____   10) $-10i$, _____

Write a polynomial function of least degree that has the following roots.

11) roots: 1, 6, -2   12) roots: 5 and -4i

For each function, create a list of possible rational zeros.

13) $f(x) = x^4 + 7x^3 - 3x - 28$

p: _____

q: _____

p/q: _____

14) $g(x) = 4x^3 - 4x^2 + x + 25$

p: _____

q: _____

p/q: _____

Find all the zeros for each of the following functions. You may want to create a p&q list, and you must show proof!

15) $f(x) = 2x^4 + 7x^3 - 2x^2 - 19x - 12$

16) $g(x) = x^4 + 6x^2 + 20x$