

*DUE September 7, 2006*

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**Directions:** Please read all questions carefully. Answer all parts of each question. Please circle or box your final answers. Show all work and justify all answers for full credit. Partial credit is always given for correct methods, partial correct calculations, and correct justification (rules, theorems, definitions, etc). Point values for each question are indicated in parentheses. Good luck.

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1. Find the GCF.

$$x^4y^7, x^8y^4, x^5y^3$$

2. Factor.  $14c^5d^3 - 12cd^2$

Factor by grouping.

3.  $36x^3 - 45x^2 - 4x + 5$

4.  $3x^3 - 21x^2 - 3x^2 + 21x$

Factor.

5.  $x^2 - 2x - 15$

6.  $18x^2 - 21x - 60$

7. Completely factor the expression.

$$25t^2 + 60t + 36$$

8. Factor by grouping or “ac”-factorization.

$$15x^2 - 19x - 10$$

Factor.

9.  $x^2 + 4x + 4$

10.  $x^2 - 36$

11.  $b^2 + 10bc + 25c^2$

12. Factor.

$$5c^3 - 135$$

Factor.

13.  $14x^4 - 23x^2 - 30$

14.  $-3x^2y^2 + 12$

Solve by factoring.

15.  $12x^2 - 11x - 5 = 0$

16.  $x^4 - 16x^2 + 1 = 9x^2 - 143$

17. Aimee Eslinger is planning an expansion of a square flower garden in a city park. If each side of the original garden is increased by 7 meters, the new total area of the garden will be 169 square meters. Find the length of each side of the original garden.

18. The sum of the squares of two consecutive odd integers is equal to 290. Find the two integers.

19. Write an equation whose solutions are 3, 2, 1, and 0.