Copy down each problem. Factor completely, if possible. If the polynomial cannot be factored, write "prime". Give answers in simplest form.

1. $12x^3 - 35x^2 - 3x$ 2. $x^4 + 5x^2 - 84$ 3. $15x^2 + 23x + 6$

4. $49 - 100x^2$ 5. $3x^2 - 243$ 6. $4x^4 - 9x^2$

7. $2x^4 - 32$ 8. $x^{2n} - y^{2n}$ 9. $(x-3)^2 - 4y^2$

10. $x^3 + 24x^2 + 144$ 11. $16x^2 - 24xy + 9y^2$ 12. $81x^2 + 198x + 121$

13. $x^{2n} - 6x^n + 9$ 14. $2x^4 - 16x^2 - 18$ 15. $16 - (x^2 - 2x + 1)$

Copy down each problem. Solve for x.

16. $16x^2 - 20x = -6$ 17. $49x^2 + 70x + 25 = 0$ 18. $5x^3 - 125x = 0$

19. $(x+6)^2 = 3(x+12) - x^2$ 20. $(2x+1)^2 - 7(2x+1) + 10 = 0$

Copy down each problem. Find the zeros.

21. $y = x^2 + 2x - 35$ 22. $y = 3x^2 - 7x - 6$

Draw a figure. Write one or more equations and solve the problem.

23. The base of a triangle is 1 cm shorter than three times the height. The area of the triangle is 22 cm². Find the height of the triangle.

24. A garden with area 800 square feet is completely enclosed with 120 feet of fencing. Find the dimensions of the garden.

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25. Graph the parabola $y = -2(x+5)(x-2)$. Find the x-intercepts, axis of symmetry, vertex and the maximum/minimum value of the function.