

Quadratic Equations Review #1
Solve each equation by factoring.

1. $x^2 - 4x - 32 = 0$ 2. $4x^2 + 20x = 0$ 3. $d^2 - 29d = -100$ 4. $18x^2 + 29x + 3 = 0$
 Handwritten: $x = 8, x = -4$ $(x-8)(x+4) = 0$

Solve each equation by completing the square.

5. $x^2 + 4 = 8x$ 6. $x^2 - 5x = 8$ 7. $2x^2 - 12x = 8$ 8. $4x^2 - 12x = 16$
 Handwritten: $-8x = -4$, $8x+16 = -4+16$, $(-4)^2 = 12$, $x-4 = \pm\sqrt{12}$, $x = 4 \pm 2\sqrt{3}$

Solve each equation by using the quadratic formula.

9. $x^2 + 2x = 7$ 10. $2x^2 - 12x + 5 = 0$ 11. $2x - 5x^2 + 3 = 0$ 12. $6x^2 - 3x + 2 = 0$
 Handwritten: $x^2 + 2x - 7 = 0$, $\frac{-2 \pm \sqrt{2^2 - 4(1)(-7)}}{2(1)}$, $\frac{4 \pm 28}{2}$

Solve each equation by using any method.

13. $3x^2 + 6x + 3 = 0$ 14. $x^2 + 6x = 4$ 15. $2x^2 + x - 1 = 3$ 16. $3x^2 + 2 = -7x$
 Handwritten: $x = -1$, $(3x+3)(x+1) = 0$, $3(x+1)(x+1)$
 17. $r^2 = 3r + 70$ 18. $(x-3)^2 = 6$ 19. $6x^2 - 8x + 9 = 4$ 20. $4x^2 + 8x = -3$
 Handwritten: $r^2 - 3r - 70 = 0$, $x = -7, 10$

Write the equation of the parabola with the given info:

21. Focus (-1, 6) Directrix y=0 22. Focus (3,-2) Directrix y=-4

Handwritten: $-y = 0$, Vertex (-1, 3), $p = 3$, $a = \frac{1}{4 \cdot 3} = \frac{1}{12}$, $y = \frac{1}{12}(x+1)^2 + 3$

Given $a = -3 + 2i$ and $b = 4 - 5i$

23. Find $a + b$ 24. Find $a - b$ 25. Find the product of a and b

26. Find $2a - 3b$ 27. Find $a^2 - b^2$
 Handwritten: $2(-3+2i) - 3(4-5i) = -6+4i - 12+15i = -18+19i$

Use your calculator to answer the following questions:

28. A ball is thrown upward vertically with an initial speed of 96 feet per second. The equation $h = 96t - 16t^2$ gives the height of the ball in t in seconds. What is the maximum height reached by the ball? When will the ball be 128 feet above its starting point?

Handwritten: $144ft$, $4sec$, $2sec$, $0 = -16t^2 + 96t - 128$, $(t-4)(t-2) = 0$, $t = 4, t = 2$, $-\frac{b}{2a} = \frac{-96}{2(-16)} = \frac{-96}{-32} = 3$, $-16(3)^2 + 96(3) = -144 + 288 = 144$

29. Terry has 200 yards of fencing to enclose a rectangular garden on three sides. The fourth side will be the side of the house. What dimensions of the garden will maximize the area?

Handwritten: $75 | 375 | 75$, $50 | 500 | 50$, $25 | 3750 | 25$

(HONORS) Write the quadratic equation with the given solutions

30. 3, -8 31. -5, $-\frac{3}{4}$ 32. $-2 \pm i$
 Handwritten: $y = x^2 + 5x - 24$, $x^2 + 8x - 3x - 24$
 33. $3 \pm 4\sqrt{3}$ 34. $\frac{4 \pm 2i\sqrt{2}}{5}$ 35. $-3 \pm 5i$

(HONORS) Solve by factoring.

36. $x^4 - 6x^2 + 5 = 0$ 37. $a^3 - 81a = 0$ 38. $x - 4\sqrt{x} + 3 = 0$ 39. $x^{\frac{1}{2}} + 3x^{\frac{1}{4}} - 10 = 0$

Handwritten: $(x^2 - 5)(x^2 - 1) = 0$, $x^2 = 5$, $x^2 = 1$, $x = \pm\sqrt{5}$, $x = \pm 1$

Handwritten: $(17) -3 \pm \sqrt{(-3)^2 - 4(1)(-70)}$, $\frac{3 \pm \sqrt{9+280}}{2}$, $\frac{3-17}{2} = \frac{-14}{2} = -7$, $\frac{3 \pm \sqrt{298}}{2} = \frac{3+17}{2} = \frac{20}{2} = 10$