Name _____ Class _____ Date _____

9-6 Practice

Form K

The Quadratic Formula and the Discriminant

Use the quadratic formula to solve each equation.

1. $3z^2 + z - 4 = 0$ $-\frac{4}{3}, 1$

2. $2d^2 + 9d = 5$ $-5, \frac{1}{2}$

3. $2y^2 + 12y + 10 = 0$ $-5, -1$

4. $2t^2 - 5t - 12 = 0$ $-\frac{3}{2}, 4$

5. $3c^2 - 13c + 4 = 0$ $\frac{1}{3}, 4$

6. $15b^2 + 22b + 8 = 0$ $-\frac{2}{3}, -\frac{4}{5}$

Use the quadratic formula to solve each equation. Round answers to the nearest hundredth.

7. $y^2 - 4y - 4 = 0$ $-0.83, 4.83$

8. $3r^2 + 5r = 1$ $-1.85, 0.18$

9. $h^2 + 12h = -16$ $-10.47, -1.53$

10. $5v^2 + 3v = 1$ $-0.84, 0.24$

11. A football is passed through the air and caught at ground level for a touchdown. The height h of the ball in feet is given by $h = -d^2 + 12d + 6$, where d is the distance in feet the ball travels horizontally. How far from the player passing the ball will the ball be caught? about 12.48 ft

Which method(s) would you choose to solve each equation? Justify your reasoning.

12. $a^2 + 3a - 11 = 0$
quadratic formula, completing the square, or graphing; the coefficient of the x^2-term is 1, but the equation cannot be factored.

13. $9d^2 - 100 = 0$
square roots; there is no x-term.

14. $6h^2 - 11h - 3 = 0$
quadratic formula, the equation cannot be factored.

15. $n^2 - n - 6 = 0$
factoring; the equation is easily factorable.

Name _____ Class _____ Date _____

9-6 Practice (continued) Form K

The Quadratic Formula and the Discriminant

Find the number of real-number solutions of each equation.

16. $x^2 - 10x + 9 = 0$ **2**

17. $-5x^2 - 2x - 14 = 0$ **no real solutions**

18. $x^2 + 10x + 25 = 0$ **1**

19. $x^2 - 4x = 0$ **2**

Use the quadratic formula to solve each equation. If necessary, round answers to the nearest hundredth.

20. $4r^2 - 100 = 0$ **±5**

21. $a^2 - 2a = 99$ **−9, 11**

22. $7g^2 - 2g - 10 = 0$ **−1.06, 1.35**

23. $15k^2 - 7k = 2$ $-\frac{1}{5}, \frac{2}{3}$

Find the value of the discriminant and the number of real-number solutions of each equation.

24. $x^2 + 7x + 5 = 0$ **29, 2**

25. $x^2 + 4x + 10 = 0$ **−24; no real solutions**

26. $-3x^2 + 9x - 2 = 0$ **57, 2**

27. $5x^2 + 11x + 8 = 0$ **−39; no real solutions**

28. The daily production of a company is modeled by the function $p = -w^2 + 75w - 1200$. The daily production, p, is dependent on the number of workers, w, present. If the break-even point is when $p = 0$, what are the least and greatest number of workers the company must have present each day in order to break even? **23; 51**

29. Reasoning The equation $3x^2 + bx + 3 = 0$ has one real solution. What must be true about b? ***b* = ±6**