Algebra 1 Name_____ ID: 1

Quadratic formula and discriminant

Date_____ Period____

1st day: (odds)
2nd day: (evens)
Solve each equation with the quadratic formula.

1) $3n^2 + 6n - 9 = 0$

2) $6x^2 + 3x - 18 = 0$

3) $-a^2 - 12a + 85 = 0$

4) $-5x^2 - 10x + 120 = 0$

5) $a^2 + 10a + 12 = 0$

6) $6x^2 + 6x - 10 = 0$

7) $-2n^2 - 2n + 84 = 0$

8) $b^2 - 12b + 9 = 0$

9) $8x^2 - 11 = 0$

10) $-2x^2 + 22 = 0$

11) $-3p^2 - p + 44 = 0$

12) $-9n^2 + 6n + 19 = 0$

13) $4x^2 + 9x + 3 = 0$

14) $2n^2 - 12n - 110 = 0$

15) $5x^2 - 11x - 78 = 0$

16) $4x^2 - 11x - 78 = 0$

17) $a^2 - 12a + 8 = 0$

18) $11v^2 - 5 = 0$

19) $-4a^2 - 4a + 15 = 0$

20) $5x^2 - 4x - 9 = 0$

21) $9x^2 - 13 = -11$

22) $a^2 - 7a - 6 = -8$

23) $11r^2 + 8r + 3 = 5$

24) $p^2 - 10p - 35 = -11$

25) $m^2 - 3m - 66 = 4$

26) $3v^2 - 6v - 142 = 2$

27) $6n^2 - 4n - 21 = -7$

28) $-5x^2 + 25 = 12$

29) $10b^2 = -2b - 3$

30) $4k^2 = 10k + 50$

31) $-4n^2 + 8n = 1$

32) $-6n^2 - 5n = -25$

33) $4n^2 + 4n = -5$

34) $2x^2 - 42 = -8x$

35) $-2n^2 + 18 = -n$

36) $-10r^2 = 12r - 12$

3rd day:
Solve each equation with the quadratic formula. (warm-up)

37) $12x^2 + 8x - 22 = 0$

38) $b^2 - 6b - 47 = -7$

39) $x^2 = 10x + 7$

Find the discriminant of each quadratic equation then state the number and type of solutions.

40) $6x^2 + 7x = 0$

41) $-4x^2 + 6x - 10 = 0$

42) $x^2 + 4x + 8 = 0$

43) $-5r^2 - 9r + 2 = 0$

44) $-9x^2 - 2x = -7$

45) $-9v^2 = 6v + 1$

46) $2x^2 + 8 = 8x$

47) $2x^2 + 8x = -8$

48) $-4n^2 - 8n - 1 = 3$

49) $-3n^2 - 7n = -6$

50) $5x^2 - 6x - 17 = -9$

51) $-4a^2 + a - 18 = -9$

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Solve each equation with the quadratic formula.

1) $3n^2 + 6n - 9 = 0$

$\{1, -3\}$

2) $6x^2 + 3x - 18 = 0$

$\left\{1\frac{1}{2}, -2\right\}$

3) $-a^2 - 12a + 85 = 0$

$\{-17, 5\}$

4) $-5x^2 - 10x + 120 = 0$

$\{-6, 4\}$

5) $a^2 + 10a + 12 = 0$

$\{-5 + \sqrt{13}, -5 - \sqrt{13}\}$

6) $6x^2 + 6x - 10 = 0$

$\left\{\frac{-3 + \sqrt{69}}{6}, \frac{-3 - \sqrt{69}}{6}\right\}$

7) $-2n^2 - 2n + 84 = 0$

$\{-7, 6\}$

8) $b^2 - 12b + 9 = 0$

$\{6 + 3\sqrt{3}, 6 - 3\sqrt{3}\}$

9) $8x^2 - 11 = 0$

$\left\{\frac{\sqrt{22}}{4}, -\frac{\sqrt{22}}{4}\right\}$

10) $-2x^2 + 22 = 0$

$\{-\sqrt{11}, \sqrt{11}\}$

11) $-3p^2 - p + 44 = 0$

$\left\{-4, 3\frac{2}{3}\right\}$

12) $-9n^2 + 6n + 19 = 0$

$\left\{\frac{1 - 2\sqrt{5}}{3}, \frac{1 + 2\sqrt{5}}{3}\right\}$

13) $4x^2 + 9x + 3 = 0$

$\left\{\frac{-9 + \sqrt{33}}{8}, \frac{-9 - \sqrt{33}}{8}\right\}$

14) $2n^2 - 12n - 110 = 0$

$\{11, -5\}$

15) $5x^2 - 11x - 78 = 0$

$\left\{5\frac{1}{5}, -3\right\}$

16) $4x^2 - 11x - 78 = 0$

$\left\{6, -3\frac{1}{4}\right\}$

17) $a^2 - 12a + 8 = 0$

$\{6 + 2\sqrt{7}, 6 - 2\sqrt{7}\}$

18) $11v^2 - 5 = 0$

$\left\{\frac{\sqrt{55}}{11}, -\frac{\sqrt{55}}{11}\right\}$

19) $-4a^2 - 4a + 15 = 0$

$\left\{-2\frac{1}{2}, 1\frac{1}{2}\right\}$

20) $5x^2 - 4x - 9 = 0$

$\left\{1\frac{4}{5}, -1\right\}$

21) $9x^2 - 13 = -11$

$\left\{\frac{\sqrt{2}}{3}, -\frac{\sqrt{2}}{3}\right\}$

22) $a^2 - 7a - 6 = -8$

$\left\{\frac{7 + \sqrt{41}}{2}, \frac{7 - \sqrt{41}}{2}\right\}$

23) $11r^2 + 8r + 3 = 5$

$\left\{\frac{-4 + \sqrt{38}}{11}, \frac{-4 - \sqrt{38}}{11}\right\}$

24) $p^2 - 10p - 35 = -11$

$\{12, -2\}$

25) $m^2 - 3m - 66 = 4$

$\{10, -7\}$

26) $3v^2 - 6v - 142 = 2$

$\{8, -6\}$

27) $6n^2 - 4n - 21 = -7$

$\left\{\frac{1 + \sqrt{22}}{3}, \frac{1 - \sqrt{22}}{3}\right\}$

28) $-5x^2 + 25 = 12$

$\left\{-\frac{\sqrt{65}}{5}, \frac{\sqrt{65}}{5}\right\}$

29) $10b^2 = -2b - 3$

No solution.

30) $4k^2 = 10k + 50$

$\left\{5, -2\frac{1}{2}\right\}$

31) $-4n^2 + 8n = 1$

$\left\{\frac{2 - \sqrt{3}}{2}, \frac{2 + \sqrt{3}}{2}\right\}$

32) $-6n^2 - 5n = -25$

$\left\{-2\frac{1}{2}, 1\frac{2}{3}\right\}$

33) $4n^2 + 4n = -5$

No solution.

34) $2x^2 - 42 = -8x$

$\{3, -7\}$

35) $-2n^2 + 18 = -n$

$\left\{\frac{1 - \sqrt{145}}{4}, \frac{1 + \sqrt{145}}{4}\right\}$

36) $-10r^2 = 12r - 12$

$\left\{\frac{-3 - \sqrt{39}}{5}, \frac{-3 + \sqrt{39}}{5}\right\}$

3rd day:

Solve each equation with the quadratic formula. (warm-up)

37) $12x^2 + 8x - 22 = 0$

$\left\{\frac{-2 + \sqrt{70}}{6}, \frac{-2 - \sqrt{70}}{6}\right\}$

38) $b^2 - 6b - 47 = -7$

$\{10, -4\}$

39) $x^2 = 10x + 7$

$\{5 + 4\sqrt{2}, 5 - 4\sqrt{2}\}$

Find the discriminant of each quadratic equation then state the number and type of solutions.

40) $6x^2 + 7x = 0$

49; two real solutions

41) $-4x^2 + 6x - 10 = 0$

−124; two imaginary solutions

42) $x^2 + 4x + 8 = 0$

−16; two imaginary solutions

43) $-5r^2 - 9r + 2 = 0$

121; two real solutions

44) $-9x^2 - 2x = -7$

256; two real solutions

45) $-9v^2 = 6v + 1$

0; one real solution

46) $2x^2 + 8 = 8x$

0; one real solution

47) $2x^2 + 8x = -8$

0; one real solution

48) $-4n^2 - 8n - 1 = 3$

0; one real solution

49) $-3n^2 - 7n = -6$

121; two real solutions

50) $5x^2 - 6x - 17 = -9$

196; two real solutions

51) $-4a^2 + a - 18 = -9$

−143; two imaginary solutions

