Algebra 1 Name_____ ID: 1

Quadratic formula and discriminant

Date_____ Period____

Solve each equation with the quadratic formula.

1) $-5n^2 + 15 = 0$

2) $4x^2 - 1 = 0$

3) $2b^2 - 2b - 40 = 0$

4) $-a^2 + 7a + 5 = 0$

5) $2r^2 - 6r - 2 = 0$

6) $-4a^2 + 25 = 0$

7) $-6b^2 - 3b + 1 = 0$

8) $8x^2 + 3x + 7 = 0$

9) $7v^2 + 2v - 4 = 0$

10) $-k^2 + 4k + 5 = 0$

11) $-7x^2 + 5x + 1 = 8$

12) $2x^2 + x - 9 = 2$

13) $-6n^2 - 4n - 1 = -5$

14) $-7p^2 - 8p + 15 = 5$

15) $3x^2 = -2 - 7x$

16) $2a^2 = 18$

17) $3x^2 = 8x + 7$

18) $-2x^2 = 5x - 63$

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

19) $6x^2 + 7x = 0$

20) $-4x^2 + 6x - 10 = 0$

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

22) $-5r^2 - 9r + 2 = 0$

23) $-9x^2 - 2x = -7$

24) $-9v^2 = 6v + 1$

25) $2x^2 + 8 = 8x$

26) $2x^2 + 8x = -8$

27) $-4n^2 - 8n - 1 = 3$

28) $-3n^2 - 7n = -6$

29) $5x^2 - 6x - 17 = -9$

30) $-4a^2 + a - 18 = -9$

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Solve each equation with the quadratic formula.

1) $-5n^2 + 15 = 0$
$\{-\sqrt{3}, \sqrt{3}\}$

2) $4x^2 - 1 = 0$ $\left\{\frac{1}{2}, -\frac{1}{2}\right\}$

3) $2b^2 - 2b - 40 = 0$
$\{5, -4\}$

4) $-a^2 + 7a + 5 = 0$ $\left\{\frac{7 - \sqrt{69}}{2}, \frac{7 + \sqrt{69}}{2}\right\}$

5) $2r^2 - 6r - 2 = 0$ $\left\{\frac{3 + \sqrt{13}}{2}, \frac{3 - \sqrt{13}}{2}\right\}$

6) $-4a^2 + 25 = 0$ $\left\{-2\frac{1}{2}, 2\frac{1}{2}\right\}$

7) $-6b^2 - 3b + 1 = 0$ $\left\{\frac{-3 - \sqrt{33}}{12}, \frac{-3 + \sqrt{33}}{12}\right\}$

8) $8x^2 + 3x + 7 = 0$
No solution.

9) $7v^2 + 2v - 4 = 0$ $\left\{\frac{-1 + \sqrt{29}}{7}, \frac{-1 - \sqrt{29}}{7}\right\}$

10) $-k^2 + 4k + 5 = 0$
$\{-1, 5\}$

11) $-7x^2 + 5x + 1 = 8$
No solution.

12) $2x^2 + x - 9 = 2$ $\left\{\frac{-1 + \sqrt{89}}{4}, \frac{-1 - \sqrt{89}}{4}\right\}$

13) $-6n^2 - 4n - 1 = -5$ $\left\{\frac{-1 - \sqrt{7}}{3}, \frac{-1 + \sqrt{7}}{3}\right\}$

14) $-7p^2 - 8p + 15 = 5$ $\left\{\frac{-4 - \sqrt{86}}{7}, \frac{-4 + \sqrt{86}}{7}\right\}$

15) $3x^2 = -2 - 7x$ $\left\{-\frac{1}{3}, -2\right\}$

16) $2a^2 = 18$
$\{3, -3\}$

17) $3x^2 = 8x + 7$ $\left\{\frac{4 + \sqrt{37}}{3}, \frac{4 - \sqrt{37}}{3}\right\}$

18) $-2x^2 = 5x - 63$ $\left\{-7, 4\frac{1}{2}\right\}$

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

19) $6x^2 + 7x = 0$
49; two real solutions

20) $-4x^2 + 6x - 10 = 0$
−124; two imaginary solutions

21) $x^2 + 4x + 8 = 0$
−16; two imaginary solutions

22) $-5r^2 - 9r + 2 = 0$
121; two real solutions

23) $-9x^2 - 2x = -7$
256; two real solutions

24) $-9v^2 = 6v + 1$
0; one real solution

25) $2x^2 + 8 = 8x$
0; one real solution

26) $2x^2 + 8x = -8$
0; one real solution

27) $-4n^2 - 8n - 1 = 3$
0; one real solution

28) $-3n^2 - 7n = -6$
121; two real solutions

29) $5x^2 - 6x - 17 = -9$
196; two real solutions

30) $-4a^2 + a - 18 = -9$
−143; two imaginary solutions