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Quadratic Formula Worksheet

II. Practice solving quadratics with the quadratic formula. Give solutions as exact answers in less directed otherwise.

1. $x^2 - 4x - 7 = 0$
2. $x^2 + 3x - 18 = 0$
3. $a^2 - 7a - 10 = 0$
4. $-x^2 + 3x + 8 = 0$
5. $-b^2 + 4b + 10 = 0$
6. $2x^2 - 4x - 3 = 0$
7. $c^2 + 7c + 16 = 0$
8. $3a^2 - 4a - 4 = 0$
9. $3d^2 + 5d - 6 = 0$
10. $4x^2 - 5x - 11 = 0$
11. $-6a^2 + 3a - 13 = 0$
12. $-9z^2 + 10z + 5 = 0$
13. $16d^2 - 40d + 25 = 0$
14. $-8x^2 - 7x + 3 = 0$
15. $3x^2 - 11x = 8 - 14x$
16. $2t^2 + 15 = 6t^2 - 5t$
17. Find the solution(s) for x as a decimal approximation rounded to the nearest hundredth.
    $2.3x^2 - 0.1x - 1.2 = 0$
18. Find the solution(s) for x as a decimal approximation rounded to the nearest hundredth.
    $-0.6x^2 + x + 3 = 0$

III. Challenge Problems

19. $\frac{2}{3}x^2 - \frac{1}{6}x - 4 = 0$
20. $-\frac{1}{5}c^2 - \frac{2}{3}c + 1 = 0$
21. The height of a ball in feet can be found by the function $h(t) = -16t^2 + 80t + 5$ where t is the elapsed time in seconds. Find the time or times that the ball is 34 feet high to the nearest tenth of a second.
22. The height of a rocket in meters can be found by the function $h(t) = -4.9t^2 + 540t + 25$ where t is the elapsed time in seconds. Find the time or times that the rocket is 750 meters high to the nearest tenth of a second.
23. The projectile motion of an object can be found by $h(t) = -16t^2 + v_0t + h_0$ where v_0 is the initial velocity of the object in feet per second, h_0 is the initial height of the object in feet, and $h(t)$ is the height in feet of the object at t seconds. A stone is shot from a slingshot with an initial velocity of 124 feet per second from a height of 6 feet. How long until the stone hits the ground?
24. The projectile motion of an object can be found by $h(t) = -4.9t^2 + v_0t + h_0$ where v_0 is the initial velocity of the object in meters per second, h_0 is the initial height of the object in meters, and $h(t)$ is the height in meters of the object at t seconds. A rocket is launched with an initial velocity of 150 meters per second from an initial height of 150 meters. How long until the rocket hits the ground?

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IV. Answer Key

1. $x = 2 \pm \sqrt{11}$
2. $x = 3, -6$
3. $a = \frac{7 \pm \sqrt{89}}{2}$
4. $x = \frac{3 \pm \sqrt{41}}{2}$
5. $b = 2 \pm \sqrt{14}$
6. $x = \frac{2 \pm \sqrt{10}}{2}$
7. $\emptyset$
8. $x = -2, \frac{2}{3}$
9. $d = \frac{-5 \pm \sqrt{97}}{6}$
10. $x = \frac{5 \pm \sqrt{201}}{8}$
11. $\emptyset$
12. $z = \frac{5 \pm \sqrt{70}}{9}$
13. $d = \frac{5}{4}$
14. $x = -\frac{7 \pm \sqrt{145}}{16}$
15. $x = \frac{-3 \pm \sqrt{105}}{6}$
16. $t = \frac{5 \pm \sqrt{265}}{8}$
17. $x \approx -0.70, 0.74$
18. $x \approx -1.55, 3.22$
19. $x = \frac{1 \pm \sqrt{385}}{8}$
20. $x = \frac{-5 \pm \sqrt{70}}{3}$
21. 0.39 sec and 4.61 sec
22. 1.36 sec and 108.84 sec
23. 7.80 sec
24. 31.58 sec
25. 7.66 sec

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