

Quadratic Formula and vertex/AOS

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Solve the following using the Quadratic Formula. (1-6)

vertex & AOS (7-12)

<p>1. $7x^2 + 28x - 6 = 0$</p> <p>$a = 7$ $b = 28$ $c = -6$</p> $x = \frac{-28 \pm \sqrt{(28)^2 - 4(7)(-6)}}{2(7)}$ $= \frac{-28 \pm \sqrt{952}}{14}$ <p>$\frac{-28 + \sqrt{952}}{14} = 0.204$ $\frac{-28 - \sqrt{952}}{14} = -4.204$</p>	<p>2. $x^2 + 2x - 4 = 0$</p> <p>$a = 1$ $b = 2$ $c = -4$</p> $x = \frac{-2 \pm \sqrt{(2)^2 - 4(1)(-4)}}{2(1)}$ $x = \frac{-2 \pm \sqrt{20}}{2}$ <p>$\frac{-2 + \sqrt{20}}{2} = 1.236$ $\frac{-2 - \sqrt{20}}{2} = -3.236$</p>	<p>3. $-2x^2 - 12x + 9 = 0$</p> <p>$a = -2$ $b = -12$ $c = 9$</p> $x = \frac{12 \pm \sqrt{(-12)^2 - 4(-2)(9)}}{2(-2)}$ $x = \frac{12 \pm \sqrt{216}}{-4}$ <p>$\frac{12 + \sqrt{216}}{-4} = -6.674$ $\frac{12 - \sqrt{216}}{-4} = 0.674$</p>
<p>4. $3x^2 + 18x - 7 = 0$</p> <p>$a = 3$ $b = 18$ $c = -7$</p> $x = \frac{-18 \pm \sqrt{(18)^2 - 4(3)(-7)}}{2(3)}$ $x = \frac{-18 \pm \sqrt{408}}{6}$ <p>$\frac{-18 + \sqrt{408}}{6} = 0.367$ $\frac{-18 - \sqrt{408}}{6} = -6.367$</p>	<p>5. $-x^2 + 6x + 6 = 0$</p> <p>$a = -1$ $b = 6$ $c = 6$</p> $x = \frac{-6 \pm \sqrt{(6)^2 - 4(-1)(6)}}{2(-1)}$ $x = \frac{-6 \pm \sqrt{60}}{-2}$ <p>$\frac{-6 + \sqrt{60}}{-2} = -0.873$ $\frac{-6 - \sqrt{60}}{-2} = 6.873$</p>	<p>6. $-3x^2 - 12x + 2 = 0$</p> <p>$a = -3$ $b = -12$ $c = 2$</p> $x = \frac{12 \pm \sqrt{(-12)^2 - 4(-3)(2)}}{2(-3)}$ $x = \frac{12 \pm \sqrt{168}}{-6}$ <p>$\frac{12 + \sqrt{168}}{-6} = -4.160$ $\frac{12 - \sqrt{168}}{-6} = 0.160$</p>
<p>7. $x^2 - 14x + 5 = 0$</p> <p>$a = 1$ $b = -14$ $c = 5$</p> $x = \frac{\text{opp } b}{2a} = \frac{14}{2(1)} = 7$ $y = (7)^2 - 14(7) + 5 = -44$ <p>vertex is (7, -44) AOS is $x = 7$</p>	<p>8. $-x^2 - 4x + 10 = 0$</p> <p>$a = -1$ $b = -4$ $c = 10$</p> $x = \frac{\text{opp } b}{2a} = \frac{4}{2(-1)} = -2$ $y = -(-2)^2 - 4(-2) + 10 = 14$ <p>vertex (-2, 14) AOS $x = -2$</p>	<p>9. $-2x^2 - 4x + 12 = 0$</p> <p>$a = -2$ $b = -4$ $c = 12$</p> $x = \frac{\text{opp } b}{2a} = \frac{4}{2(-2)} = -1$ $y = -2(-1)^2 - 4(-1) + 12 = 14$ <p>vertex (-1, 14) AOS $x = -1$</p>
<p>10. $2x^2 - 7x - 11 = 0$</p> <p>$a = 2$ $b = -7$ $c = -11$</p> $x = \frac{\text{opp } b}{2a} = \frac{7}{2(2)} = 1.75$ $y = 2(1.75)^2 - 7(1.75) - 11 = -17.125$ <p>vertex (1.75, -17.125) AOS $x = 1.75$</p>	<p>11. $-x^2 + 5x + 7 = 0$</p> <p>$a = -1$ $b = 5$ $c = 7$</p> $x = \frac{\text{opp } b}{2a} = \frac{-5}{2(-1)} = 2.5$ $y = -(2.5)^2 + 5(2.5) + 7 = 13.25$ <p>vertex (2.5, 13.25) AOS $x = 2.5$</p>	<p>12. $2x^2 - 9x + 1 = 0$</p> <p>$a = 2$ $b = -9$ $c = 1$</p> $x = \frac{\text{opp } b}{2a} = \frac{9}{2(2)} = 2.25$ $y = 2(2.25)^2 - 9(2.25) + 1 = -9.125$ <p>vertex (2.25, -9.125) AOS $x = 2.25$</p>