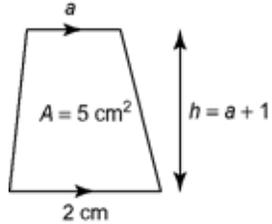


Section 3.2 The Quadratic Formula

- True or False.
 - A quadratic equation of the form, $0 = ax^2 + bx + c$, $a \neq 0$, can be solved using the quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.
 - The x -intercepts of a quadratic function are not related to the solutions of the related quadratic equation.
 - All perfect square trinomials can be factored. By letting each binomial factor equal zero, you can find the roots of the related quadratic equation.
 - The quadratic formula can be used to find the roots of any quadratic equation.
- Use the quadratic formula to find the exact roots of each equation.
 - $x^2 + 2x + 1 = 0$
 - $3x^2 - 8x + 5 = 0$
 - $-4x^2 - 5x - 1 = 0$
 - $x^2 + 9x + 10 = 0$
 - $2x^2 + 6x - 2 = 0$
 - $-5x^2 + 12x + 7 = 0$
- Solve for x . Round decimal answers to the nearest hundredth.
 - $x^2 - 2.3x - 6.8 = 0$
 - $4.5x^2 + 8.4x - 5 = 0$
 - $3.9x^2 + 7.8x - 9.1 = 0$
 - $-\frac{3}{8}x^2 + 3.4x - 2.8 = 0$
 - $5.5x^2 + \frac{6}{7}x - \frac{9}{5} = 0$
 - $-\frac{9}{10}x^2 - 4.8x - 6.3 = 0$
- Lyndsey skis off a small ramp. Her path is modelled by $h(d) = -0.2d^2 + 0.7d + 0.9$, where h is her height above ground, in metres, and d is the horizontal distance from the end of the ramp, in metres.
 - What horizontal distance did Lyndsey travel through the air?
 - At what height did Lyndsey leave the ramp?
- Jamal is skipping rocks. On one throw, the path of the rock after it touches the water for the first time, is given by $h(t) = -1.95t^2 + 0.624t$, where h is the height of the rock above the surface of the lake in metres, and t is the time in seconds.
 - Determine the length of time the rock is above the surface of the water.
 - How high is the rock above the surface of the water at time $t = 0.08$ s?
- The area of a trapezoid is $A = \frac{1}{2}h(a + b)$, where a and b are the lengths of the parallel sides and h is the height of the trapezoid.



The diagram shows a trapezoid with a top horizontal base labeled 'a' and a bottom horizontal base labeled '2 cm'. A vertical line segment on the right side represents the height, labeled 'h = a + 1'. Inside the trapezoid, the area is given as 'A = 5 cm²'.

 - Find the side length, a , of the trapezoid to the nearest tenth of a centimetre.
 - What is the height of the trapezoid to the nearest tenth of a centimetre?
- Jessica needs to cut out a rectangle with specific measurements. The length of the rectangle needs to be two more centimetres than an unknown number, and the width needs to be three centimetres less than twice the same unknown number. The area of the rectangle must be 35 cm^2 .
 - Find the length of the rectangle to the nearest centimetre.
 - Find the width of the rectangle to the nearest centimetre.