Quadratic Equations

Algebra · 6 questions · step-by-step answers at the end

Name: Date: Score: / 6

USEFUL EQUATIONS

$x = [-b \pm \sqrt{(b^2 - 4ac)}]/(2a)$ $x^2 + bx + c = (x + b/2)^2 - (b/2)^2 + c$

$(x - p)(x - q) = 0 \Rightarrow x = p$ or $x = q$ $b^2 - 4ac$

Questions

Show your working in the space under each question.

1. EASY Solve $x^2 - 16 = 0$.

2. EASY Solve $x^2 + 3x = 0$.

3. MEDIUM Solve $x^2 + 2x - 15 = 0$.

4. MEDIUM Solve $3x^2 - 7x + 2 = 0$.

5. HARD Solve $x^2 + 4x - 1 = 0$, giving answers to 2 decimal places.

6. HARD A rectangle has area 60 cm² and is 4 cm longer than it is wide. Find its dimensions.

Step-by-step answers

Quadratic Equations

1. $x^2 = 16$, so **$x = 4$ or $x = -4$**.
2. Factorise: $x(x + 3) = 0$, so **$x = 0$ or $x = -3$**.
3. $(x + 5)(x - 3) = 0$, so **$x = -5$ or $x = 3$**.
4. $(3x - 1)(x - 2) = 0$, so **$x = 1/3$ or $x = 2$**.
5. $x = (-4 \pm \sqrt{(16 + 4)})/2 = -2 \pm \sqrt{5}$. **$x = 0.24$ or $x = -4.24$**.
6. $w(w + 4) = 60$, so $w^2 + 4w - 60 = 0$ and $(w + 10)(w - 6) = 0$. Width cannot be negative: **6 cm by 10 cm**.