Year 10 Quadratic Equations Part 4

4 Using the discriminant, determine the number of solutions for these quadratic equations.

a $x^2 + 5x + 3 = 0$ b $x^2 + 3x + 4 = 0$ c $x^2 + 6x + 9 = 0$

d $x^2 + 7x - 3 = 0$ e $x^2 + 5x - 4 = 0$ f $x^2 + 4x - 4 = 0$

g $4x^2 + 5x + 3 = 0$ h $4x^2 + 3x + 1 = 0$ i $2x^2 + 12x + 9 = 0$

j $-x^2 - 6x - 9 = 0$ k $-2x^2 + 3x - 4 = 0$ l $-4x^2 - 6x + 3 = 0$

5 Find the exact solutions to the following quadratic equations, using the quadratic formula.

a $x^2 + 3x - 2 = 0$ b $x^2 + 7x - 4 = 0$ c $x^2 - 7x + 5 = 0$

d $x^2 - 8x + 16 = 0$ e $-x^2 - 5x - 4 = 0$ f $-x^2 - 8x - 7 = 0$

g $4x^2 + 7x - 1 = 0$ h $3x^2 + 5x - 1 = 0$ i $3x^2 - 4x - 6 = 0$

j $-2x^2 + 5x + 5 = 0$ k $-3x^2 - x + 4 = 0$ l $5x^2 + 6x - 2 = 0$

6 Find the exact solutions to the following quadratic equations, using the quadratic formula.

a $x^2 + 4x + 1 = 0$ b $x^2 - 6x + 4 = 0$ c $x^2 + 6x - 2 = 0$

d $-x^2 - 3x + 9 = 0$ e $-x^2 + 4x + 4 = 0$ f $-3x^2 + 8x - 2 = 0$

g $2x^2 - 2x - 3 = 0$ h $3x^2 - 6x - 1 = 0$ i $-5x^2 + 8x + 3 = 0$

7, 8(½)	8(½), 10	8(½), 9, 11

7 A triangle's base is 5 cm more than its height of x cm. Find its height if the triangle's area is 10 cm^2.
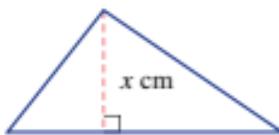
8 Solve the following using the quadratic formula.

a $3x^2 = 1 + 6x$ b $2x^2 = 3 - 4x$ c $5x = 2 - 4x^2$

d $2x - 5 = -\dfrac{1}{x}$ e $\dfrac{3}{x} = 3x + 4$ f $-\dfrac{5}{x} = 2 - x$

g $5x = \dfrac{2x + 2}{x}$ h $x = \dfrac{3x + 4}{2x}$ i $3x = \dfrac{10x - 1}{2x}$

9 Two positive numbers differ by 3 and their product is 11. Find the numbers.

10 Find the exact perimeter of this right-angled triangle.
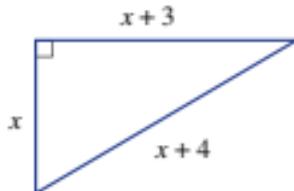
Factorise these expressions. Use fractions, not decimals.

a $x^2 + 3x + 1$ **b** $x^2 + 7x + 9$

c $x^2 - x - 4$ **d** $x^2 - 5x + 5$

e $x^2 + 5x - 2$ **f** $x^2 + x - 5$

g $x^2 - 9x + 13$ **h** $x^2 - 3x - 2$

i $x^2 - 7x - 1$ **j** $x^2 - x - 7$

****