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1 Express each of the following in the form $ax^2 + bx + c$:

(i) $y = (x + 4)^2 - 4$ (ii) $y = (x - 5)^2 + 3$ (iii) $y = 2(x - 1)^2 - 3$

(iv) $y = 2\left(x + \frac{1}{2}\right)^2 + \frac{1}{2}$ (v) $y = 5\left(x - \frac{3}{4}\right)^2 - \frac{1}{2}$

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2 Using the given form, solve, where possible, each of the equations $y = 0$ in question 1, leaving your answer in surd form.

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3 Express each of the following quadratic functions in the form $(x + b)^2 + c$:

(i) $y = x^2 + 8x - 3$ (ii) $y = x^2 - 6x + 9$ (iii) $y = x^2 - 10x + 5$

(iv) $y = x^2 + 10x$ (v) $y = x^2 + 5x - 7$ (vi) $y = x^2 - 7x + 6$

(vii) $y = x^2 + 11x - 1$ (viii) $y = x^2 - 13x$ (ix) $y = x^2 - 3$

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4 Use the form $(x + b)^2 + c$ to solve each of the equations $y = 0$ in question 3, leaving your answer in surd form.

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5 Express each of the following quadratic functions in the form $a(x + b)^2 + c$, stating the values of a , b and c :

(i) $y = 3x^2 + 6x - 4$ (ii) $y = 2x^2 - 5x + 6$ (iii) $y = -x^2 + 3x - 2$

(iv) $y = -5x^2 + 3x - 15$ (v) $y = 5x^2 + 2x - 3$ (vi) $y = 7x^2 - 2x + 1$

(vii) $y = -2x^2 + 5x + 1$ (viii) $y = 3 - 2x - 4x^2$ (ix) $y = -3x^2 + 7x + 2$

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6 Use the form $a(x + b)^2 + c$ to solve, where possible, each of the equations $y = 0$ in question 5, leaving your answer in surd form.