Consolidation of Quadratics

Solve by the formula to 2 dec places

1) $2x^2+8x+5=0$ 2) $3x^2-x-11=0$ 3) $5x^2-2x-7=0$

4) $4x^2+10x+3=0$ 5) $2x^2-7x+1=0$ 6) $3x^2+x-5=0$

Complete the square and identify coords of turning point

7) x^2+8x+5 8) x^2-7x-3 9) $x^2+10x+4$

10) $2x^2+6x+5$ 11) $3x^2-9x+8$ 12) $5x^2-10x+3$

Solve by factorising

13) $x^2-7x+6=0$ 14) $x^2+6x+8=0$ 15) $x^2-5x-14=0$

16) $x^2-8x-20=0$ 17) $x^2-6x+9=0$ 18) $x^2-3x-4=0$

19) $2x^2+5x-7=0$ 20) $3x^2-10x+8=0$ 21) $6x^2+13x+6=0$

Solve by difference of Two Squares

22) $4x^2-9=0$ 23) $16x^2-25=0$ 24) $49x^2-36=0$

Solve by the formula to 2 dec places

1) $2x^2+8x+5=0$ 2) $3x^2-x-11=0$ 3) $5x^2-2x-7=0$

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$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

1) $2x^2+8x+5=0$

$$x = \frac{-8 \pm \sqrt{8^2-4(2)(5)}}{2(2)}$$

$$x = \frac{-8 \pm \sqrt{64-40}}{}$$

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$$x = \frac{-8 \pm \sqrt{24}}{4}$$

$x = -0.78$

$x = -3.22$

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2) $3x^2 - x - 11 = 0$

$$x = \frac{+1 \pm \sqrt{(-1)^2 - 4(3)(-11)}}{2(3)}$$

$$x = \frac{+1 \pm \sqrt{133}}{6}$$

$x = 2.09$

$x = -1.76$

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3) $5x^2 - 2x - 7 = 0$

$$x = \frac{+2 \pm \sqrt{(-2)^2 - 4(5)(-7)}}{2(5)}$$

$$x = \frac{+2 \pm \sqrt{144}}{10}$$

$x = 1.4$

$x = -1$

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4) $4x^2 + 10x + 3 = 0$

$$x = \frac{-10 \pm \sqrt{10^2 - 4(4)(3)}}{2(4)}$$

$$x = \frac{-10 \pm \sqrt{52}}{8}$$

$x = -0.35$

$x = -2.15$

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5) $2x^2 - 7x + 1 = 0$

$$x = \frac{+7 \pm \sqrt{(-7)^2 - 4(2)(1)}}{2(2)}$$

$$x = \frac{+7 \pm \sqrt{41}}{4}$$

$x = 3.35$

$x = 0.15$

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6) $3x^2 + x - 5 = 0$ $\quad x = \dfrac{-1 \pm \sqrt{1^2 - 4(3)(-5)}}{2(3)}$

$x = \dfrac{-1 \pm \sqrt{61}}{6}$ $\quad x = 1.14$

$x = -1.47$

Complete the square and identify coords of turning point

7) $x^2 + 8x + 5$ $\quad$ 8) $x^2 - 7x - 3$ $\quad$ 9) $x^2 + 10x + 4$

10) $2x^2 + 6x + 5$ $\quad$ 11) $3x^2 - 9x + 8$ $\quad$ 12) $5x^2 - 10x + 3$

7) $x^2 + 8x + 5 = (x+4)^2 + 5 - 16 = (x+4)^2 - 11$

Min point $(-4, -11)$

8) $x^2 - 7x - 3 = \left(x - \frac{7}{2}\right)^2 - 3 - \frac{49}{4} = \left(x - \frac{7}{2}\right)^2 - \frac{61}{4}$

Min point $\left(\frac{7}{2}, -\frac{61}{4}\right)$

9) $x^2 + 10x + 4 = (x+5)^2 + 4 - 25 = (x+5)^2 - 21$

Min point $(-5, -21)$

10) $2x^2 + 6x + 5 = 2\left[x^2 + 3x + \frac{5}{2}\right]$

$= 2\left[\left(x + \frac{3}{2}\right)^2 + \frac{5}{2} - \frac{9}{4}\right]$

$= 2\left(x + \frac{3}{2}\right)^2 + 5 - \frac{9}{2}$

$= 2\left(x + \frac{3}{2}\right)^2 + \frac{1}{2}$ $\quad$ Min point $\left(-\frac{3}{2}, \frac{1}{2}\right)$

11) $3x^2 - 9x + 8 = 3\left[x^2 - 3x + \frac{8}{3}\right]$

$= 3\left[\left(x - \frac{3}{2}\right)^2 + \frac{8}{3} - \frac{9}{4}\right]$

$= 3\left(x - \frac{3}{2}\right)^2 + 8 - \frac{27}{4}$

$= 3\left(x - \frac{3}{2}\right)^2 + \frac{5}{4}$ Min point $\left(\frac{3}{2}, \frac{5}{4}\right)$

12) $5x^2 - 10x + 3 = 5\left[x^2 - 2x + \frac{3}{5}\right]$

$= 5\left[(x-1)^2 + \frac{3}{5} - 1\right]$

$= 5(x-1)^2 + 3 - 5$

$= 5(x-1)^2 - 2$ Min point $(1, -2)$