Topic: Factorising Quadratic Formula

17.01 $x^2 - 4x - 6 = 0$

$a = +1 \quad b = -4 \quad c = -6$

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - (4)(+1)(-6)}}{2(+1)}$$

$$x = \frac{+4 + \sqrt{40}}{2} \qquad x = \frac{+4 - \sqrt{40}}{2}$$

$= 5.16227766 \qquad = -1.16227766$

$= 5.2 \qquad = -1.2$

correct to 1 decimal place

17.02 $2x^2 + 4x - 9 = 0$

$a = +2 \quad b = +4 \quad c = -9$

$$x = \frac{-(+4) \pm \sqrt{(+4)^2 - (4)(+2)(-9)}}{2(+2)}$$

$$x = \frac{-4 + \sqrt{88}}{4} \qquad x = \frac{-4 - \sqrt{88}}{4}$$

$= 1.34520788 \qquad = -3.34520788$

$= 1.3 \qquad = -3.3$

correct to 1 decimal place

17.03 $x^2 + 2x - 6 = 0$

$a = +1 \quad b = +2 \quad c = -6$

$$x = \frac{-(+2) \pm \sqrt{(+2)^2 - (4)(+1)(-6)}}{2(+1)}$$

$$x = \frac{-2 + \sqrt{28}}{2} \qquad x = \frac{-2 - \sqrt{28}}{2}$$

$= 1.645751311 \qquad = -3.645751311$

$= 1.6 \qquad = -3.6$

correct to 2 significant figures

17.04 $x^2 + 5x + 3 = 0$

$a = +1 \quad b = +5 \quad c = +3$

$$x = \frac{-(+5) \pm \sqrt{(+5)^2 - (4)(+1)(+3)}}{2(+1)}$$

$$x = \frac{-5 + \sqrt{13}}{2} \qquad x = \frac{-5 - \sqrt{13}}{2}$$

$= -0.6972243623 \qquad = -4.302775638$

$= -0.7 \qquad = -4.3$

correct to 1 decimal place

Topic: Factorising Quadratic Formula

17.05 $2x^2+3x-1=0$

$a=+2 \quad b=+3 \quad c=-1$

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

$x=\frac{-3+\sqrt{17}}{4}$ $\quad x=\frac{-3-\sqrt{17}}{4}$

$=0.2807764064$ $\quad =-1.780776406$

$=0.3$ $\quad =-1.8$

correct to 1 decimal place

17.06 $4x^2-7x+1=0$

$a=+4 \quad b=-7 \quad c=+1$

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

$x=\frac{+7+\sqrt{33}}{8}$ $\quad x=\frac{+7-\sqrt{33}}{8}$

$=1.593070331$ $\quad =0.1569296$

$=1.6$ $\quad =0.2$

correct to 1 decimal place

17.07 $2x^2-6x-5=0$

$a=+2 \quad b=-6 \quad c=-5$

$$x=\frac{-(-6)\pm\sqrt{(-6)^2-(4)(+2)(-5)}}{2(+2)}$$

$x=\frac{+6+\sqrt{76}}{4}$ $\quad x=\frac{+6-\sqrt{76}}{4}$

$=3.679449472$ $\quad =-0.679449$

$=3.7$ $\quad =-0.7$

correct to 1 decimal place

17.08 $3x^2+7x-5=0$

$a=+3 \quad b=+7 \quad c=-5$

$$x=\frac{-(+7)\pm\sqrt{(+7)^2-(4)(+3)(-5)}}{2(+3)}$$

$x=\frac{-7+\sqrt{109}}{6}$ $\quad x=\frac{-7-\sqrt{109}}{6}$

$=0.573384418$ $\quad =-2.906717751$

$=0.6$ $\quad =-2.9$

correct to 1 decimal place.

Topic: Factorising Quadratic formula

17.09

$x^2 + 2x = 9$

$x^2 + 2x - 9 = 0$

$a = +1 \quad b = +2 \quad c = -9$

$$x = \frac{-(+2) \pm \sqrt{(+2)^2 - (4)(+1)(-9)}}{2(+1)}$$

$$x = \frac{-2 + \sqrt{40}}{2} \qquad x = \frac{-2 - \sqrt{40}}{2}$$

$= 2.16227766 \qquad = -4.16227766$

$= 2.2 \qquad = -4.2$

correct to 1 decimal place

17.10

$2x^2 + 7x - 3 = 0$

$a = +2 \quad b = +7 \quad c = -3$

$$x = \frac{-(+7) \pm \sqrt{(+7)^2 - (4)(+2)(-3)}}{2(+2)}$$

$$x = \frac{-7 + \sqrt{73}}{4} \qquad x = \frac{-7 - \sqrt{73}}{4}$$

$= 0.38600093 63 \qquad = -3.886000$

$= 0.4 \qquad = -3.9$

Correct to 1 decimal place.

17.11

$x^2 + 3x - 5 = 0$

$a = +1 \quad b = +3 \quad c = -5$

$$x = \frac{-(+3) \pm \sqrt{(+3)^2 - (4)(+1)(-5)}}{2(+1)}$$

$$x = \frac{-3 + \sqrt{29}}{2} \qquad x = \frac{-3 - \sqrt{29}}{2}$$

$= 1.19 2882404 \qquad = -4.192882 4$

$= 1.2 \qquad = -4.2$

correct to 2 significant figures

17.12

$x^2 + 3x + 5 = 0$

$a = +1 \quad b = +3 \quad c = +5$

a) $b^2 - 4ac$

$= (+3)^2 - (4)(+1)(+5)$

$= 9 - 20$

$= -11$

b) $b^2 - 4ac < 0$ so there are no real roots. The discriminant is less than zero.

Topic: Factorising - Quadratic formula

17.13

$5x^2+4x-2=0$

$a=+5 \quad b=+4 \quad c=-2$

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

$$x=\frac{-4+\sqrt{56}}{10} \qquad x=\frac{-4-\sqrt{56}}{10}$$

$=0.3483314774 \qquad =-1.1483314$

$=0.35 \qquad =-1.15$

correct to 2 decimal places

17.14

$2x^2+3x-7=0$

$a=+2 \quad b=+3 \quad c=-7$

$$x=\frac{-(+3)\pm\sqrt{(+3)^2-(4)(+2)(-7)}}{2(+2)}$$

$$x=\frac{-3+\sqrt{65}}{4} \qquad x=\frac{-3-\sqrt{65}}{4}$$

$=1.2655644437 \qquad =-2.7655644$

$=1.3 \qquad =-2.8$

correct to 1 decimal place