

Workout

Question 1

(a) $(x + 4)^2 - 15$

(b) $(x + 5)^2 - 22$

(c) $(x + 1)^2 - 2$

(d) $(x - 3)^2 - 19$

(e) $(x - 2)^2 - 17$

(f) $(x - 6)^2 - 33$

(g) $(x + 7)^2 - 46$

(h) $(x - 1)^2 - 16$

(i) $(x + 2)^2 - 15$

(j) $(x + 0.5)^2 - 8.25$

(k) $(x + 1.5)^2 - 1.25$

(l) $(x - 3.5)^2 - 14.25$

(m) $(x - 4.5)^2 - 21.25$

(n) $(x + 5.5)^2 - 27.25$

(o) $(x - 50)^2 - 2525$

Question 2

(a) $x = -2 + \sqrt{3}$ or $x = -2 - \sqrt{3}$

(b) $x = -4 + \sqrt{26}$ or $x = -4 - \sqrt{26}$

(c) $x = -7 + \sqrt{53}$ or $x = -7 - \sqrt{53}$

(d) $x = 4 + 3\sqrt{2}$ or $x = 4 - 3\sqrt{2}$

(e) $x = 5 + \sqrt{15}$ or $x = 5 - \sqrt{15}$

(f) $x = -9 + \sqrt{74}$ or $x = -9 - \sqrt{74}$

(g) $x = -6 + 2\sqrt{13}$ or $x = -6 - 2\sqrt{13}$

(h) $x = 1 + \sqrt{11}$ or $x = 1 - \sqrt{11}$

(i) $x = \frac{1}{2}(7 + \sqrt{61})$ or $x = \frac{1}{2}(7 - \sqrt{61})$

(j) $x = \frac{1}{2}(-1 + \sqrt{29})$ or $x = \frac{1}{2}(-1 - \sqrt{29})$

(k) No real roots

(l) $x = 3 + \sqrt{39}$ or $x = 3 - \sqrt{39}$

Question 3:

(a) $2(x + 2)^2 - 6$

(b) $2(x + 3)^2 - 21$

(c) $3(x - 2)^2 - 10$

(d) $4(x + 1.5)^2 - 14$

(e) $2(x - 0.75)^2 - 6.125$

(f) $5(x - 2)^2 + 10$

Question 4:

(a) $x = -2 + \sqrt{3}$ or $x = -2 - \sqrt{3}$

(b) $x = -4 + \sqrt{26}$ or $x = -4 - \sqrt{26}$

(c) $x = \frac{1}{3}(3 + \sqrt{6})$ or $x = \frac{1}{3}(3 - \sqrt{6})$

(d) $x = \frac{1}{5}(-5 + \sqrt{70})$ or $x = \frac{1}{5}(-5 - \sqrt{70})$

(e) $x = 3$ or $x = -1/2$

(f) $x = \frac{1}{4}(7 + \sqrt{41})$ or $x = \frac{1}{4}(7 - \sqrt{41})$

Apply

Question 1: $x^2 + 6x + 5$

Question 2: $x^2 - 4x - 5$

Question 3: $x^2 - 14x + 60$

Question 4

(a) (-5, -13) (b) (-2, -3) (c) (-3, -1) (d) (1, 2)

(e) (3, -12) (f) (0.5, -4.25) (g) (-4.5, -19.25)

(h) (3, -11) (i) (-11, -21)

Question 5: <https://www.youtube.com/watch?v=A-JRFcexB78>

Question 6:

Mistake 1 – it should be -25, not -10

Mistake 2 – if they added 2 to -10, it should be -8, not -12. It should be $-25 + 2 = 23$

Mistake 3 – they forgot the +/- in front of the $\sqrt{12}$, but it should be $\sqrt{23}$ anyway.

The correct answers should be: $x = -5 + \sqrt{23}$ or $x = -5 - \sqrt{23}$