Penyelesain Lengkap

 Praktis 1

Praktis Formatif

1.1 Fungsi dan Persamaan Kuadratik
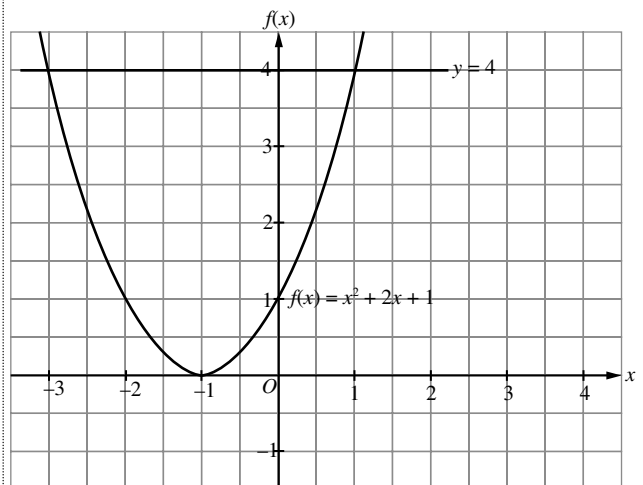### *Quadratic Functions and Equations*

1 (a)

	Ungkapan *Expression*	Kuasa pemboleh ubah tertinggi $= 2$ *Highest power of the variable $= 2$* ($\checkmark$ / $\times$)	Bilangan pemboleh ubah $= 1$ *Number of variable $= 1$* ($\checkmark$ / $\times$)	Adakah terdapat kuasa pemboleh ubah yang bukan nombor bulat? (Ya/Tidak) *Is there a power of variable which is not a whole number?* (*Yes/No*)	Ungkapan kuadratik dalam satu pemboleh ubah (Ya/Bukan) *Quadratic expression in one variable* (*Yes/No*)
(i)	$\sqrt{2}\,n^2 - \dfrac{n}{2}$	$\checkmark$	$\checkmark$	Tidak/*No*	Ya/*Yes*
(ii)	$-\dfrac{1}{3t^2} + 5$	$\times$	$\checkmark$	Ya/*Yes*	Bukan/*No*
(iii)	$d^2 + b + 1$	$\checkmark$	$\times$	Tidak/*No*	Bukan/*No*
(iv)	$2x^2 + \dfrac{1}{2}x$	$\checkmark$	$\checkmark$	Tidak/*No*	Ya/*Yes*
(v)	$-\dfrac{1}{3k^{-2}} - 1$	$\checkmark$	$\checkmark$	Tidak/*No*	Ya/*Yes*

(b) (i) Bukan ungkapan kuadratik kerana kuasa tertinggi pemboleh ubah ialah 3.
Not a quadratic expression because the highest power of variable is 3.

(ii) Bukan ungkapan kuadratik kerana terdapat kuasa pemboleh ubah yang bukan nombor bulat.
Not a quadratic expression because there is a variable with a power which is not a whole number.

(iii) Ungkapan kuadratik dalam satu pemboleh ubah.
Quadratic expression in one variable

(iv) Bukan ungkapan kuadratik kerana terdapat kuasa pemboleh ubah yang bukan nombor bulat.
Not a quadratic expression because there is a variable with a power which is not a whole number.

(v) Ungkapan kuadratik dalam satu pemboleh ubah
Quadratic expression in one variable.

(vi) Bukan ungkapan kuadratik dalam satu pemboleh ubah kerana terdapat dua pemboleh ubah iaitu p dan q.
Not a quadratic expression in one variable because there are two variables, p and q.

2 (a)

$f(x) = x^2 + 2x + 1$

(b) 2

(c) $(-3, 4)$, $(1, 4)$

(d) Fungsi kuadratik mempunyai hubungan banyak-kepada-satu.
A quadratic function has many-to-one relation.

3 Nilai a bagi $f(x) = 6$
Value of a for f(x)
Nilai a bagi $g(x) = 5$
Value of a for g(x)
Nilai a bagi $h(x) = 4$
Value of a for h(x)

4 Nilai a bagi $f(x) = -3$
Value of a for f(x)
Nilai a bagi $g(x) = -2$
Value of a for g(x)
Nilai a bagi $h(x) = -1$
Value of a for h(x)

5 (a) Pintasan-y ialah 20. Maka, $c = 20$.
y-intercept is 20. Hence, c = 20.
$b = 0$ sebab paksi simetri ialah paksi-y.
b = 0 because the axis of symmetry is y-axis.
$g(x) = ax^2 + 20$
Di/*At* $(2, 0)$, $4a + 20 = 0$
$\qquad\qquad\qquad a = -5$
$a = -5$, $b = 0$, $c = 20$

(b) $x = 0$

(c) $(0, 20)$

(d) $x = 2$ atau/*or* $x = -2$

6 (a) $2 = (1)^2 - 4(1) + c$
$c = 5$

(b) $8 = (-2)^2 - 4(-2) + c$
$c = -4$

7 (a) $f(x) = (x - p)(x - q)$
Punca-punca ialah $x = 3$ dan $x = 5$.
The roots are x = 3 and x = 5.
$f(x) = (x - 3)(x - 5)$
Secara perbandingan, $p = 3$ dan $q = 5$.
By comparison, p = 3 and q = 5.
$f(x) = x^2 - 8x + 15$
Pintasan-y ialah 15. Maka, $m = 15$.
y-intercept is 15. Thus, m = 15.
$p = 3$, $q = 5$, $m = 15$

(b) $x = 4$

(c) $f(x) = (x - 3)(x - 5)$
Apabila $x = 4$,
When x = 4,
$f(x) = (4 - 3)(4 - 5)$
$\quad = -1$
Maka, titik minimum ialah $(4, -1)$.
Hence, the minimum point is (4, –1).

(d) Pintasan-y dan kecerunan parabola tidak berubah. Hanya tanda bagi b berubah sebab paksi simetri berubah dari sebelah kanan paksi-y ke sebelah kiri paksi-y.
The y-intercept and steepness of the parabola remain unchanged. Only the sign of b changes because the axis of symmetry changes from the right of y-axis to the left of y-axis.
Fungsi kuadratik asal/*Original quadratic function*:
$f(x) = x^2 - 8x + 15$

Fungsi kuadratik selepas pantulan pada paksi-y
Quadratic function after the reflection on y-axis:
$g(x) = x^2 + 8x + 15$

8 Graf 1, 2 dan 3 menunjukkan graf fungsi kuadratik dengan $a > 0$ dan nilai a bagi graf 3 > nilai a bagi graf 2 > nilai a bagi graf 1. Apabila nilai a semakin besar, graf itu mempunyai bentuk parabola semakin sempit. Nilai b dan c masing-masing sama dengan sifar sebab paksi simetri dan pintasan-y untuk ketiga-tiga graf itu ialah paksi-y dan 0.
Graphs 1, 2 and 3 show quadratic function graphs with a > 0 and value of a for graph 3 > value of a for graph 2 > value of a for graph 1. The greater the value of a, the graph has the narrower parabola shape. Values of b and c are zero respectively because the axes of symmetry and y-intercepts of all the three graphs are y-axis and 0.

9 (a) $p = 1$

(b) $9 = q + 4(2) - (1)(2)^2$
$q = 5$

(c) Jika graf itu dipantulkan pada paksi-x, graf berbentuk minimum akan diperoleh.
When the graph is reflected in the x-axis, a minimum graph will be obtained.
$f(x) = -(-x^2 + 4x + 5)$
$f(x) = x^2 - 4x - 5$

(d) Nilai a dan c akan kekal tidak berubah dan nilai b akan bertukar tanda daripada positif kepada negatif dan sebaliknya.
The values of a and c remain unchanged and the value of b will change sign from positive to negative and vice versa.

10 (a) $f(x) = \dfrac{1}{2}(2x + 5)(4x - 9)$

(b) $f(x) = \dfrac{1}{2}(2x + 5)(4x - 9) = 16.5$
$(2x + 5)(4x - 9) = 33$
$8x^2 + 2x - 45 = 33$
$8x^2 + 2x - 78 = 0$
$4x^2 + x - 39 = 0$

11 (a) $f(x) = (x + 2)(x - 6)$

(b) $f(x) = (x + 2)(x - 6) = 2x + 4$
$x^2 - 4x - 12 = 2x + 4$
$x^2 - 6x - 16 = 0$

12 (a) Umur Azmi sekarang/*Azmi's age now* $= x$
Umur Amran sekarang/*Amran's age now* $= x + 3$
5 tahun yang lepas/5 *years ago*:
Umur Azmi /*Azmi's age* $= x - 5$
Umur Amran/*Amran's age* $= x - 2$
$f(x) = (x - 5)(x - 2)$
$f(x) = x^2 - 7x + 10$

(b) $f(x) = x^2 - 7x + 10 = 40$
$x^2 - 7x - 30 = 0$

13 $x^2 + (x - 7)^2 = (x + 1)^2$
$x^2 + x^2 - 14x + 49 = x^2 + 2x + 1$
$x^2 - 16x + 48 = 0$

14 (a) $V(w) = 5w(w + 3)$ atau/*or* $5w^2 + 15w$

(b) $5w^2 + 15w = 90$
$w^2 + 3w - 18 = 0$

15 (a) $h(x) = x(x - 5) + (3x + 4)(x - 7)$
  $= x^2 - 5x + 3x^2 - 21x + 4x - 28$
  $= 4x^2 - 22x - 28$

 (b) $4x^2 - 22x - 28 = 52$
  $4x^2 - 22x - 80 = 0$
  $2x^2 - 11x - 40 = 0$

16 (a) $(-4)^2 + 3(-4) - 4 = 16 - 12 - 4$
  $= 0 =$ (Sebelah kanan/*Right hand side*)
  Maka, $x = -4$ memuaskan persamaan kuadratik itu. $x = -4$ ialah puncanya.
  Therefore, $x = -4$ satisfies the quadratic equation. $x = -4$ is its root.

 (b) $(-1)^2 + 3(-1) - 4 = 1 - 3 - 4$
  $= -6 \neq$ (Sebelah kanan/*Right hand side*)
  Maka, $x = -1$ tidak memuaskan persamaan kuadratik itu. $x = -1$ bukan puncanya.
  Therefore, $x = -1$ does not satisfy the quadratic equation. $x = -1$ is not its root.

 (c) $(1)^2 + 3(1) - 4 = 1 + 3 - 4$
  $= 0 =$ (Sebelah kanan/*Right hand side*)
  Maka, $x = 1$ memuaskan persamaan kuadratik itu. $x = 1$ ialah puncanya.
  Therefore, $x = 1$ satisfies the quadratic equation. $x = 1$ is its root.

17 (a) Sebelah kiri/*Left hand side* $= (-1)^2 - 2(-1)$
  $= 3$
  $=$ Sebelah kanan/*Right hand side*
  Maka, $x = -1$ memuaskan persamaan kuadratik itu. $x = -1$ ialah puncanya.
  Therefore, $x = -1$ satisfies the quadratic equation. $x = -1$ is its root.

 (b) Sebelah kiri/*Left hand side* $= (1)^2 - 2(1)$
  $= -1$
  $\neq$ Sebelah kanan/*Right hand side*
  Maka, $x = 1$ tidak memuaskan persamaan kuadratik itu. $x = 1$ bukan puncanya.
  Therefore, $x = 1$ does not satisfy the quadratic equation. $x = 1$ is not its root.

 (c) Sebelah kiri/*Left hand side* $= (3)^2 - 2(3)$
  $= 3$
  $=$ Sebelah kanan/*Right hand side*
  Maka, $x = 3$ memuaskan persamaan kuadratik itu. $x = 3$ ialah puncanya.
  Therefore, $x = 3$ satisfies the quadratic equation. $x = 3$ is its root.

18 Punca-punca bagi persamaan kuadratik ialah pintasan-x, iaitu apabila $f(x) = 0$, maka $x = -2$ atau $x = 3$.
  Roots of quadratic equation are the x-intercepts of quadratic function when $f(x) = 0$, therefore, $x = -2$ or $x = 3$.

19 (a) $x = -2, x = 2$
 (b) $x = 4, x = 5$
 (c) $x = -1, x = 3$

20 (a) Sebab 2 dan 4 memuaskan $f(x) = 0$
  Because 2 and 4 satisfy $f(x) = 0$
 (b) $(x - 2)$ dan/*and* $(x - 4)$
 (c) $f(x) = (x - 2)(x - 4)$
  $f(x) = x^2 - 6x + 8$

21 (a) $x^2 - 3x = 0$
  $x(x - 3) = 0$
  $x = 0$ atau/*or* $(x - 3) = 0$
  $x = 0$ atau/*or* $x = 3$

 (b) $x^2 - 2x - 15 = 0$
  $(x + 3)(x - 5) = 0$
  $(x + 3) = 0$ atau/*or* $(x - 5) = 0$
  $x = -3$ atau/*or* $x = 5$

 (c) $3x^2 + 23x - 8 = 0$
  $(3x - 1)(x + 8) = 0$
  $(3x - 1) = 0$ atau/*or* $(x + 8) = 0$
  $x = \dfrac{1}{3}$ atau/*or* $x = -8$

 (d) $4n^2 - 49 = 0$
  $(2n + 7)(2n - 7) = 0$
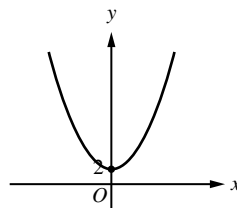 $n = -\dfrac{7}{2}$ atau/*or* $n = \dfrac{7}{2}$

 (e) $3n^2 = 10n - 8$
  $3n^2 - 10n + 8 = 0$ ← Tulis dalam bentuk am dahulu. *Write in general form first.*
  $(3n - 4)(n - 2) = 0$
  $n = \dfrac{4}{3}$ atau/*or* $n = 2$

 (f) $27n^2 = 24 - 18n$
  $27n^2 + 18n - 24 = 0$
  $9n^2 + 6n - 8 = 0$ ← Bahagi dengan faktor sepunya. *Divide with common factor.*
  $(3n + 4)(3n - 2) = 0$
  $n = -\dfrac{4}{3}$ atau/*or* $n = \dfrac{2}{3}$
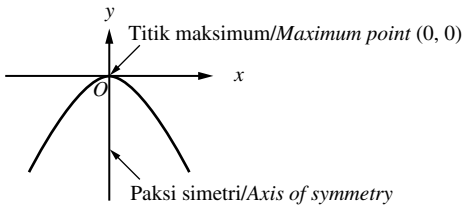
22 (a) $f(x) = x^2 + 2$
  Nilai/*value of* $a = 1$, bentuk graf /*shape* $\cup$,
  Nilai/*value of* $b = 0$, paksi simetri ialah paksi-y/*axis of symmetry is y-axis*.
  Nilai/*value of* $c = 2$, pintasan-y/*y-intercept* $= 2$
  Maka, titik minimum ialah $(0, 2)$.
  Therefore, the minimum point is $(0, 2)$.

 (b) $f(x) = x^2 - 4$
  Nilai/*value of* $a = 1$, bentuk graf /*shape* $\cup$,
  Nilai/*value of* $b = 0$, paksi simetri ialah paksi-y/*axis of symmetry is y-axis*.
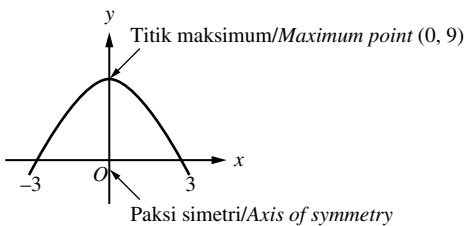 Nilai/*value of* $c = -4$, pintasan-y/*y-intercept* $= -4$

Maka, titik minimum ialah $(0, -4)$.
Therefore, the minimum point is $(0, -4)$.
Apabila/*when* $f(x) = 0$
$$x^2 - 4 = 0$$
$$(x + 2)(x - 2) = 0$$
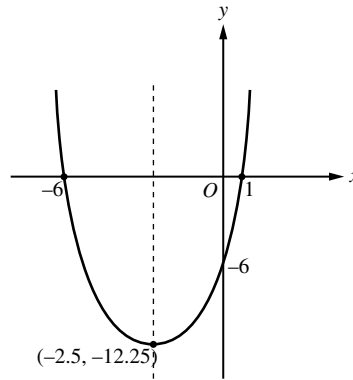$x = -2$ atau/*or* $x = 2$

(c) $f(x) = -x^2$
Nilai/*value of* $a = -1$, bentuk graf/*shape* $\cap$,
Nilai/*value of* $b = 0$, paksi simetri ialah paksi-y/*axis of symmetry is y-axis*.
Nilai/*value of* $c = 0$, pintasan-y/y-intercept $= 0$
Maka, titik maksimum ialah $(0, 0)$.
Therefore, the maximum point is $(0, 0)$.

Titik maksimum/*Maximum point* $(0, 0)$
Paksi simetri/*Axis of symmetry*

(d) $f(x) = -x^2 + 9$
Nilai/*value of* $a = -1$, bentuk graf/*shape* $\cap$,
Nilai/*value of* $b = 0$, paksi simetri ialah paksi-y/*axis of symmetry is y-axis*.
Nilai/*value of* $c = 9$, pintasan-y/y-intercept $= 9$
Maka, titik maksimum ialah $(0, 9)$.
Therefore, the maximum point is $(0, 9)$.
Apabila/*when* $f(x) = 0$
$$9 - x^2 = 0$$
$$(3 + x)(3 - x) = 0$$
$x = -3$ atau/*or* $x = 3$

Titik maksimum/*Maximum point* $(0, 9)$
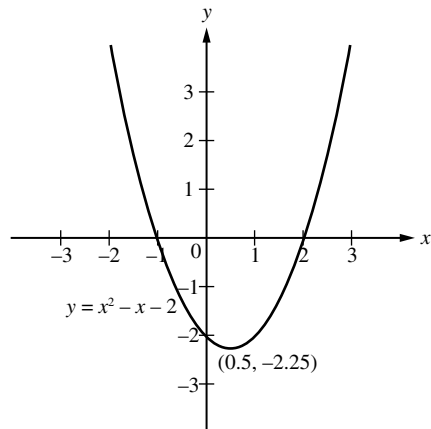Paksi simetri/*Axis of symmetry*

(e) $f(x) = x^2 + 5x - 6$
Nilai/*value of* $a = 1$, bentuk graf /*shape* $\cup$,
Nilai/*value of* $b = 5$, paksi simetri ialah/*axis of symmetry is* $x = -\dfrac{b}{2a} = -\dfrac{5}{2(1)} = -2.5$

Nilai/*value of* $c = -6$, pintasan-y/y-intercept $= -6$
Apabila/*When* $f(x) = 0$
$$x^2 + 5x - 6 = 0$$
$$(x + 6)(x - 1) = 0$$
$x = -6$ atau/*or* $x = 1$
Apabila/*When* $x = -2.5$, $y = (-2.5)^2 + 5(-2.5) - 6$
$= -12.25$
Maka, titik minimum ialah $(-2.5, -12.25)$.
Therefore, the minimum point is $(-2.5, -12.25)$.

$(-2.5, -12.25)$

(f) $f(x) = x^2 - x - 2$
Nilai/*value of* $a = 1$, bentuk graf /*shape* $\cup$,
Nilai/*value of* $b = -1$, paksi simetri ialah/*axis of symmetry is* $x = -\dfrac{b}{2a} = -\dfrac{-1}{2(1)} = 0.5$
Nilai/*value of* $c = -2$, pintasan-y/y-intercept $= -2$
Apabila/*when* $f(x) = 0$
$$x^2 - x - 2 = 0$$
$$(x + 1)(x - 2) = 0$$
$x = -1$ atau/*or* $x = 2$
Apabila/*When* $x = 0.5$, $y = (0.5)^2 - (0.5) - 2 = -2.25$
Maka, titik minimum ialah $(0.5, -2.25)$.
Therefore, the minimum point is $(0.5, -2.25)$.

$y = x^2 - x - 2$
$(0.5, -2.25)$

(g) $f(x) = -x^2 - 2x + 15$
Nilai/*value of* $a = -1$, bentuk graf/*shape* $\cap$,
Nilai/*value of* $b = -2$, paksi simetri ialah/*axis of symmetry is* $x = -\dfrac{b}{2a} = -\dfrac{-2}{2(-1)} = -1$
Nilai/*value of* $c = 15$, pintasan-y/y-intercept $= 15$
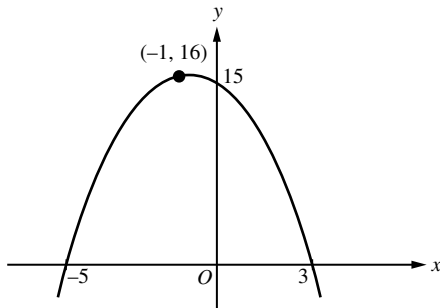
Apabila/*When* $f(x) = 0$

$$x^2 + 2x - 15 = 0$$
$$(x + 5)(x - 3) = 0$$

$x = -5$ atau/*or* $x = 3$
Apabila/*When* $x = -1$, $y = -(-1)^2 - 2(-1) + 15 = 16$
Maka, titik maksimum ialah $(-1, 16)$.
Therefore, the maximum point is $(-1, 16)$.

(h) $f(x) = -2x^2 - 4x + 6$
Nilai/*value of* $a = -2$, bentuk graf/*shape* ∩,
Nilai/*value of* $b = -4$, paksi simetri ialah/*axis of*
symmetry is $x = -\dfrac{b}{2a} = -\dfrac{-4}{2(-2)} = -1$
Nilai/*value of* $c = 6$, pintasan-y/y-*intercept* $= 6$
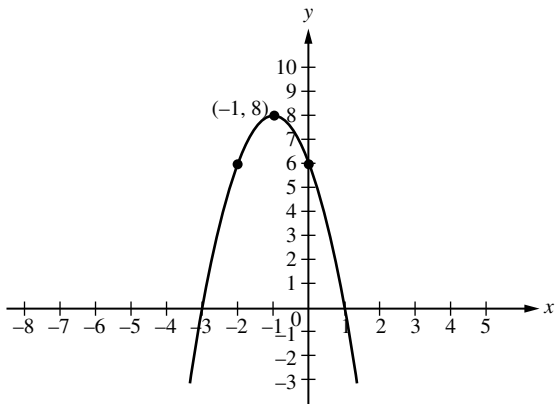Apabila/*When* $f(x) = 0$

$$-2x^2 - 4x + 6 = 0$$
$$x^2 + 2x - 3 = 0$$
$$(x + 3)(x - 1) = 0$$

$x = -3$ atau/*or* $x = 1$
Apabila/*When* $x = -1$, $y = -2(-1)^2 - 4(-1) + 6 = 8$
Maka, titik maksimum ialah $(-1, 8)$.
Therefore, the maximum point is $(-1, 8)$.

23 (a) $\qquad x^2 - \dfrac{5}{2}x = \dfrac{3}{2}$

$$2x^2 - 5x - 3 = 0$$
$$(2x + 1)(x - 3) = 0$$

$x = -\dfrac{1}{2}$ atau/*or* $x = 3$

(b) $\qquad \dfrac{1}{16}a^2 - 25 = 0$

$$\left(\dfrac{1}{4}a - 5\right)\left(\dfrac{1}{4}a + 5\right) = 0$$

$a = 20$ atau/*or* $a = -20$

(c) $\qquad 6h^2 - 19h = -15$

$$6h^2 - 19h + 15 = 0$$
$$(2h - 3)(3h - 5) = 0$$

$h = \dfrac{3}{2}$ atau/*or* $h = \dfrac{5}{3}$

(d) $\quad 8q^2 + 18q - 5 = 0$

$$(4q - 1)(2q + 5) = 0$$

$q = \dfrac{1}{4}$ atau/*or* $q = -\dfrac{5}{2}$

(e) $\qquad m + 5 = \dfrac{6}{m}$

$$m^2 + 5m - 6 = 0$$
$$(m - 1)(m + 6) = 0$$

$m = 1$ atau/*or* $m = -6$

(f) $\qquad r + 2 = \dfrac{28}{r - 1}$

$$(r + 2)(r - 1) = 28$$
$$r^2 + r - 30 = 0$$
$$(r + 6)(r - 5) = 0$$

$r = -6$ atau/*or* $r = 5$

(g) $\qquad k - 1 = \dfrac{(k + 20)}{6k}$

$$6k(k - 1) = k + 20$$
$$6k^2 - 7k - 20 = 0$$
$$(2k - 5)(3k + 4) = 0$$

$k = \dfrac{5}{2}$ atau/*or* $k = -\dfrac{4}{3}$

(h) $\quad n(n - 5) = 6$

$$n^2 - 5n - 6 = 0$$
$$(n + 1)(n - 6) = 0$$

$n = -1$ atau/*or* $n = 6$

(i) $\quad \dfrac{(h^2 - 1)}{5} - \dfrac{h}{6} = 0$

$$6(h^2 - 1) - 5h = 0$$
$$6h^2 - 5h - 6 = 0$$
$$(3h + 2)(2h - 3) = 0$$

$h = -\dfrac{2}{3}$ atau/*or* $h = \dfrac{3}{2}$

24 (a) $\dfrac{1}{2}x(x - 3) = 54$

$$x^2 - 3x - 108 = 0$$

(b) $(x - 12)(x + 9) = 0$
$x = 12$

(c) Tinggi/*Height* $= 12 - 3 = 9$ cm

25 (a) $x(110 - x) = 3\,000$
$x^2 - 110x + 3\,000 = 0$

(b) $(x - 50)(x - 60) = 0$
$x = 50$ atau/*or* $x = 60$

(c) Panjang/*Length* $= 60$ cm, Lebar/*Width* $= 50$ cm

26 (a) $\dfrac{120}{(x - 2)} - \dfrac{120}{x} = 5$

$$120x - 120x + 240 = 5x^2 - 10x$$
$$5x^2 - 10x - 240 = 0$$
$$x^2 - 2x - 48 = 0$$

(b) $(x + 6)(x - 8) = 0$
$x = 8$

(c) Apabila/*When x = 8*,
bayaran setiap orang/*payment of each person*

$= \dfrac{\text{RM120}}{8} = \text{RM15}$

jimat/*save* RM3, setiap orang bayar/*each of them*

pay RM12, maka/*therefore*

$\dfrac{\text{RM120}}{\text{RM12}} = 10$

$n = 10 - 8$

    $= 2$ orang lagi/*more persons*

27 (a) $\dfrac{1}{2}[2t + 1 + 4t - 2](3t) = 138$

$\qquad (6t - 1)3t = 276$

$\qquad 18t^2 - 3t - 276 = 0$

$\qquad 6t^2 - t - 92 = 0$

(b) $(6t + 23)(t - 4) = 0$

$t = 4$

(c) Panjang tepi sendeng/*the length of slanting edge*

$= \sqrt{(5^2 + 12^2)} = 13$ cm

Perimeter $= 2(4) + 1 + 3(4) + 4(4) - 2 + 13$

$\qquad = 48$ cm

28 (a) $x(x + 8) = 209$

$x^2 + 8x - 209 = 0$

(b) $(x - 11)(x + 19) = 0$

$x = 11$

(c) Perimeter $= [11 + (8 + 11)] \times 2 = 60$ cm

29 (a) $\dfrac{120}{v} - \dfrac{120}{v + 20} = \dfrac{1}{2}$

$240(v + 20) - 240v = v(v + 20)$

$v^2 + 20v - 4\,800 = 0$

(b) $(v - 60)(v + 80) = 0$

$v = 60$

Praktis Sumatif

Kertas 1

1 C   **2** A   **3** D   **4** A   **5** A

6 B   **7** C   **8** B   **9** B

Kertas 2

Bahagian/*Section* A

1 (a) $v = 3 + 2t - t^2$

Apabila/ *When v = 0*

$3 + 2t - t^2 = 0$

$t^2 - 2t - 3 = 0$

$(t + 1)(t - 3) = 0$

$\qquad\qquad t = 3$ s

(b) Apabila/*When v = 3*

$3 + 2t - t^2 = 3$

$2t - t^2 = 0$

$t(2 - t) = 0$

$t = 0$ s or $t = 2$ s

(c) Paksi simetri/*Axis of symmetry* is $t = -\dfrac{b}{2a}$

$\qquad\qquad = -\dfrac{2}{2(-1)}$

$\qquad\qquad = 1$ s

2 $\qquad\quad 36x(x - 2) = 1\,728$

$36x^2 - 72x - 1728 = 0$

$\qquad x^2 - 2x - 48 = 0$

$\qquad (x - 8)(x + 6) = 0$

$\qquad\qquad\qquad x = 8$

3 (a) $x = \dfrac{-2 + 8}{2}$

$x = 3$

(b) $f(x) = (x + 2)(x - 8)$

$\qquad = x^2 - 6x - 16$

$\qquad = (x - 3)^2 - 9 - 16$

$\qquad = (x - 3)^2 - 25$

$p = 3, q = 25$

(c) $f(x) = (x - 3)^2 - 25$

Koordinat titik minimum ialah/*Coordinates of the minimum point is* (3, –25).
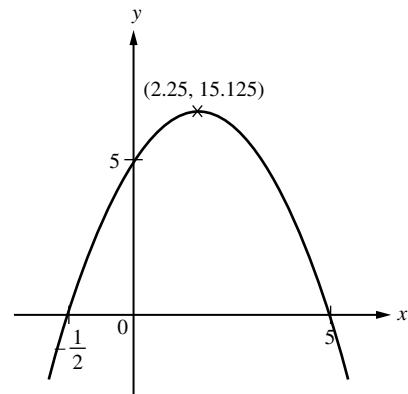
Bahagian B/*Section B*

4 (a) $f(x) = -2x^2 + 9x + 5$

$\qquad = -(2x^2 - 9x - 5)$

$\qquad = -(2x + 1)(x - 5)$

$-(2x + 1)(x - 5) = 0$

$x = -\dfrac{1}{2}$ atau/*or* $x = 5$

(b) 5

(c) Persamaan paksi simetri ialah $x = \dfrac{-\dfrac{1}{2} + 5}{2}$

$x = 2.25$

Equation of axis of symmetry is $x = \dfrac{-\dfrac{1}{2} + 5}{2}$

$x = 2.25$.

Apabila/*When x = 2.25*,

$y = -2(2.25^2) + 9(2.25) + 5$

$\quad = 15.125$

Titik maksimum/*Maximum point* (2.25, 15.125)

5 (a) $(x + 3)(x + 4) = (2x + 2)(x + 1)$

$x^2 + 7x + 12 = 2x^2 + 4x + 2$

$x^2 - 3x - 10 = 0$

(b) $(x + 2)(x - 5) = 0$

$\qquad\qquad x = 5$

(c) (i) Panjang segi empat tepat *A*/*Length of rectangle A*

$= x + 4$

$= 5 + 4$

$= 9$ cm

Lebar segi empat tepat *A*/*Width of rectangle A*
= $x + 3$
= $5 + 3$
= 8 cm

(ii) Panjang segi empat tepat *B*/*Length of rectangle B*
= $2x + 2$
= $10 + 2$
= 12 cm

Lebar segi empat tepat *B*/*Width of rectangle B*
= $x + 1$
= $5 + 1$
= 6 cm

(iii) Perimeter segi empat tepat *A*/*Perimeter of rectangle A*
= $9 + 9 + 8 + 8$
= 34 cm

Perimeter segi empat tepat *B*/*Perimeter of rectangle B*
= $12 + 12 + 6 + 6$
= 36 cm

Beza perimeter/*Difference between perimeter*
= 36 cm – 34 cm
= 2 cm

6 (a) (i) $a > 0$
(ii) $b < 0$
(iii) $c = 5$
(b) (i) 2
(ii) $(1, 2), (3, 2)$
(iii) Hubungan banyak kepada satu
Many to one relation