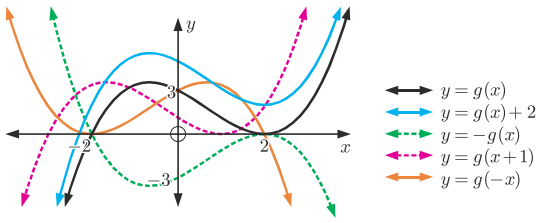
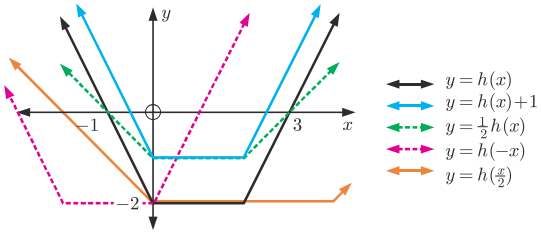
7



8



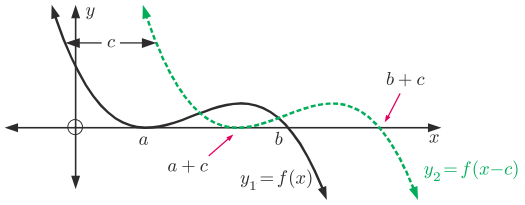
REVIEW SET 5A

1 **a** 3 **b** $4x^2 - 4x$ **c** $x^2 + 2x$ **d** $3x^2 - 6x - 2$

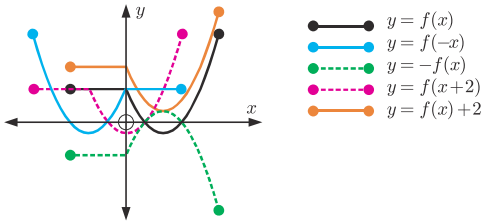
2 **a** 5 **b** $-x^2 + x + 5$ **c** $5 - \frac{1}{2}x - \frac{1}{4}x^2$ **d** $-x^2 - 3x + 5$

3 $g(x) = 3x^3 - 11x^2 + 14x - 6$

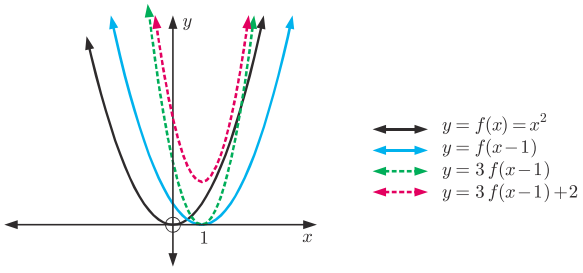
4



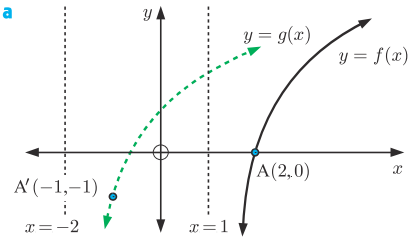
5



6



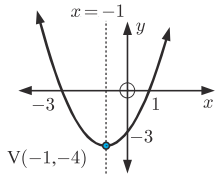
7 **a**



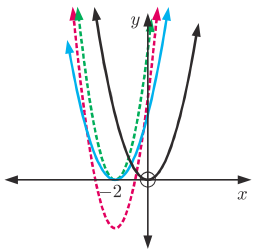
b $x = -2$ **c** $A'(-1, -1)$

REVIEW SET 5B

1



2

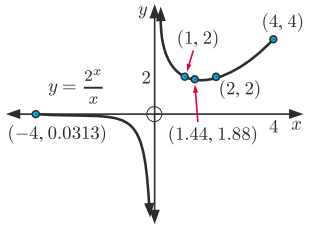


3 **a** no

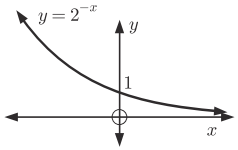
b horizontal asymptote $y = 0$, vertical asymptote $x = 0$

c min. turning point $(1.44, 1.88)$

d



4 **a**

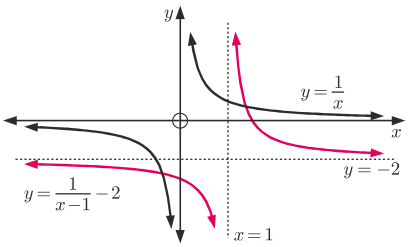


b **i** true **ii** false **iii** false **iv** true

5 **a** $g(x) = (x-1)^2 + 8$ **b** $\{y \mid y \geqslant 4\}$ **c** $\{y \mid y \geqslant 8\}$

6 **a** **i** $y = \dfrac{1}{x-1} - 2$

ii



For $y = \dfrac{1}{x}$, VA is $x = 0$, HA is $y = 0$

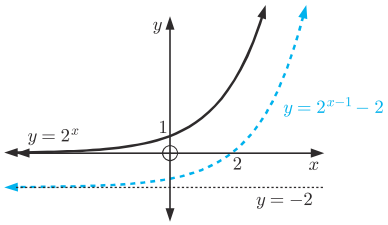
For $y = \dfrac{1}{x-1} - 2$, VA is $x = 1$, HA is $y = -2$

iii For $y = \dfrac{1}{x}$, domain is $\{x \mid x \neq 0\}$, range is $\{y \mid y \neq 0\}$

For $y = \dfrac{1}{x-1} - 2$, domain is $\{x \mid x \neq 1\}$, range is $\{y \mid y \neq -2\}$

b **i** $y = 2^{x-1} - 2$

ii

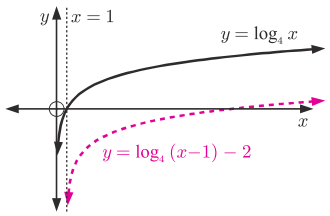


For $y = 2^x$, HA is $y = 0$, no VA
For $y = 2^{x-1} - 2$, HA is $y = -2$, no VA

iii For $y = 2^x$, domain is $\{x \mid x \in \mathbb{R}\}$,
range is $\{y \mid y > 0\}$
For $y = 2^{x-1} - 2$, domain is $\{x \mid x \in \mathbb{R}\}$,
range is $\{y \mid y > -2\}$

c **i** $y = \log_4(x-1) - 2$

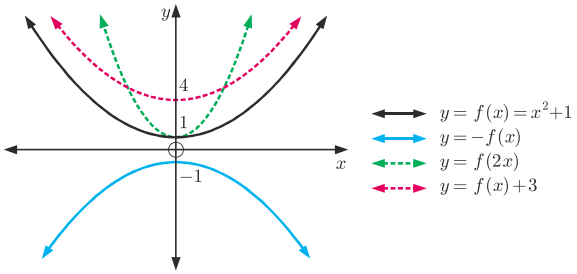
ii



For $y = \log_4 x$, VA is $x = 0$, no HA
For $y = \log_4(x-1) - 2$, VA is $x = 1$, no HA

iii For $y = \log_4 x$, domain is $\{x \mid x > 0\}$,
range is $\{y \in \mathbb{R}\}$
For $y = \log_4(x-1) - 2$, domain is $\{x \mid x > 1\}$,
range is $\{y \in \mathbb{R}\}$

7

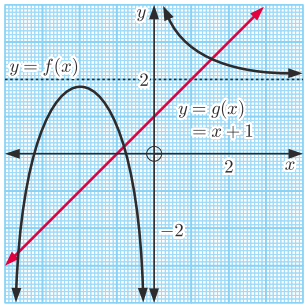


REVIEW SET 5C

1 **a** **i** $(-2, 1.8)$ **ii** $x = 0$ **iii** $y = 2$

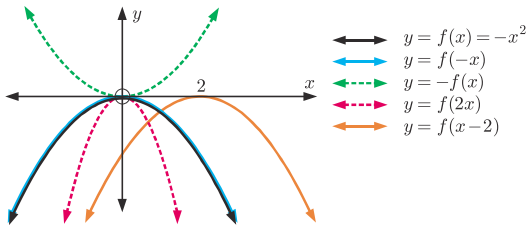
iv x-intercepts -3.2, -0.75

b

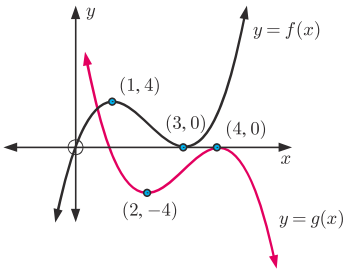


c $(-3.65, -2.65)$, $(-0.8, 0.2)$, and $(1.55, 2.55)$

2



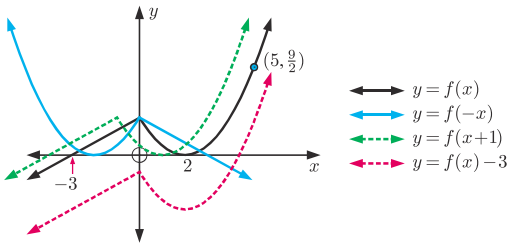
3 **a**



b $(2, -4)$ and $(4, 0)$

4 $g(x) = -x^2 - 6x - 7$

5



6 $g(x) = x^3 + 6x^2 + 8x + 10$

7 **a** **i** $y = 3x + 8$ **ii** $y = 3x + 8$

b $f(x+k) = a(x+k) + b = ax + b + ka = f(x) + ka$

EXERCISE 6A

1 **a** 4, 13, 22, 31 **b** 45, 39, 33, 27
c 2, 6, 18, 54 **d** 96, 48, 24, 12

2 **a** Starts at 8 and each term is 8 more than the previous term. Next two terms 40, 48.

b Starts at 2, each term is 3 more than the previous term; 14, 17.

c Starts at 36, each term is 5 less than the previous term; 16, 11.

d Starts at 96, each term is 7 less than the previous term; 68, 61.

e Starts at 1, each term is 4 times the previous term; 256, 1024.

f Starts at 2, each term is 3 times the previous term; 162, 486.

g Starts at 480, each term is half the previous term; 30, 15.

h Starts at 243, each term is $\frac{1}{3}$ of the previous term; 3, 1.

i Starts at 50 000, each term is $\frac{1}{5}$ of the previous term; 80, 16.

3 **a** Each term is the square of the term number; 25, 36, 49.

b Each term is the cube of the term number; 125, 216, 343.

c Each term is $n(n+1)$ where n is the term number; 30, 42, 56.

4 **a** 79, 75 **b** 1280, 5120 **c** 625, 1296
d 13, 17 **e** 16, 22 **f** 6, 12