

## Revision 4: Quadratics expressions, equations and graphs

Name:	Class:	Date:
Mark		/ 54 %

1) Solve the following

[37]

a)  $z(z+2) = 0$

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

c)  $(b - 6)(b+6) = 0$

d)  $(b+10)(b - 6) = 0$

e)  $(4y - 7)(4y - 11) = 0$

f)  $(12 - z)(9 - 2z) = 0$

g)  $z^2 - 11z = 0$

h)  $z^2 + 11z = 0$

i)  $15z^2 + 20z = 0$

j)  $12x^2 = 16x$

k)  $c^2 - 81 = 0$

l)  $64x^2 - 9 = 0$

m)  $a^2 - 4 = 0$

n)  $64y^2 - 100 = 0$

o)  $y^2 + 11y + 30 = 0$

p)  $a^2 + 4a - 45 = 0$

q)  $c^2 - 8c + 15 = 0$

r)  $c^2 - 4c - 21 = 0$

$$s) a^2 + 8a + 7 = 0$$

$$t) b^2 - 4b + 4 = 0$$

$$u) c^2 + 6c - 72 = 0$$

$$v) a^2 - 10a - 24 = 0$$

$$w) 6 = 7b - b^2$$

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

$$y) a^2 + 4a = 12$$

$$z) 2a^2 + 5a + 3 = 0$$

$$aa) 3a^2 + 8a - 16 = 0$$

$$bb) 2y^2 - 7y - 15 = 0$$

$$cc) 3b^2 - 10b + 8 = 0$$

$$dd) 2z^2 - 11z + 15 = 0$$

$$ee) 2x^2 + 9x + 9 = 0$$

$$ff) 3c^2 + 4c - 4 = 0$$

$$gg) 3x^2 - 10x - 8 = 0$$

$$hh) 3z^2 + 4z + 1 = 0$$

$$ii) 7x^2 - 37x - 30 = 0$$

$$jj) 2c^2 - 15c + 25 = 0$$

$$kk) 2c^2 + c - 1 = 0$$

2) Solve the following, leaving your answers to 3 significant figures.

[4]

a)  $8a^2 + a - 10 = 0$

b)  $12z^2 - 9z + 1 = 0$

c)  $6z^2 - z - 4 = 0$

d)  $10b^2 + 8b = 10$

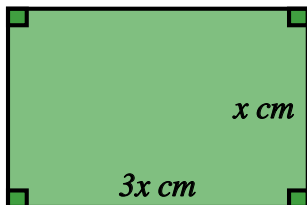
3) The product of two consecutive odd numbers is 783. Form and solve a quadratic equation to find the two numbers.

[1]

4) The length of a rectangle exceeds the width by 3 cm. If the area is  $108 \text{ cm}^2$ . Find the length of the rectangle by forming and solving a quadratic equation.

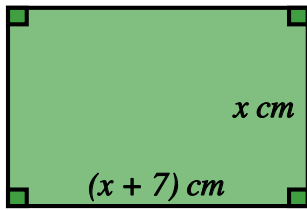
[1]

5) The rectangle below has an area  $147 \text{ cm}^2$  and the length is three times the width. Find the dimensions of the rectangle.



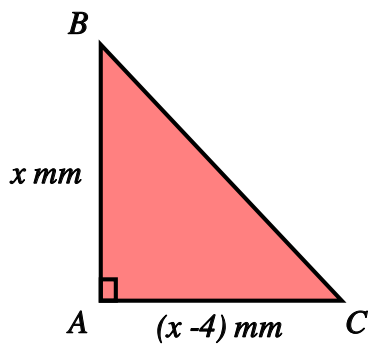
[1]

6) The rectangle below has width  $x$  cm, length  $(x + 7)$  cm and area  $18 \text{ cm}^2$ . Find the dimensions of the rectangle.



[1]

7) The triangle below has base  $(x - 4)$  mm, height  $x$  mm and area  $21 \text{ mm}^2$ . Find the length of side AC. [1]

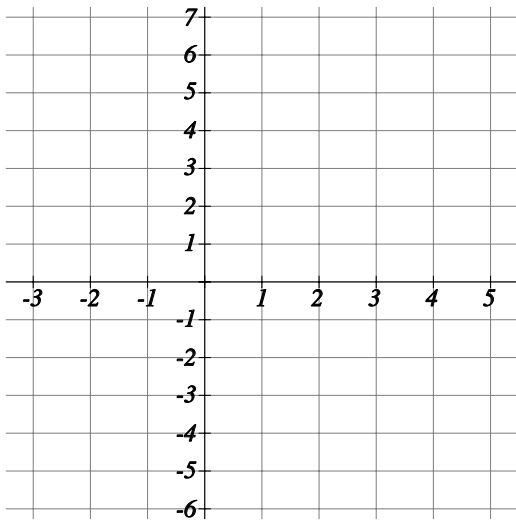


8) a) Complete the table for the equation  $y = x^2 - 2x - 3$

[1]

$x$	-2	-1	0	1	2	3	4
$x^2$	4		0		4	9	
$-2x$	4	2		-2		-6	-8
$-3$	-3	-3		-3	-3		-3
$y$		0			-3		

b) Draw  $y = x^2 - 2x - 3$  on the grid below

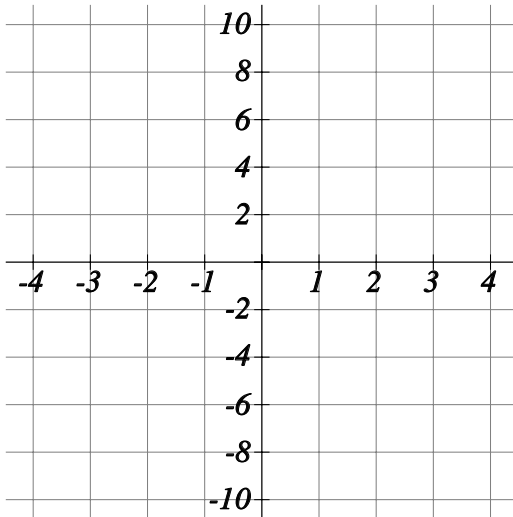


9) a) Complete the table for the equation  $y = x^2 - 3x$

[1]

$x$	-3	-2	-1	0	1	2	3
$y$	18		4		-2		0

b) Draw  $y = x^2 - 3x$  on the grid below

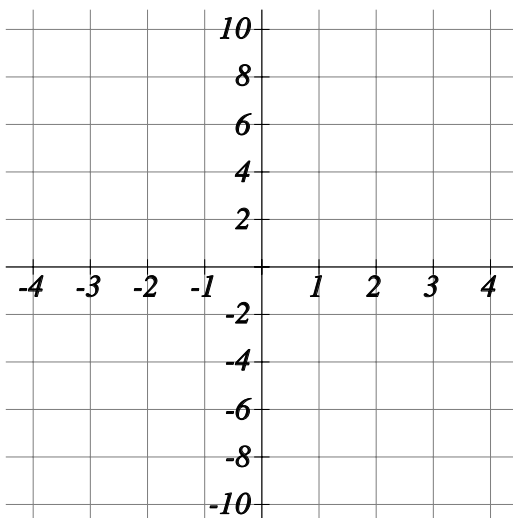


10) a) Complete the table for the equation  $y = x^2 + 2$

[1]

$x$	-3	-2	-1	0	1	2	3
$y$	11		3		3		11

b) Draw  $y = x^2 + 2$  on the grid below

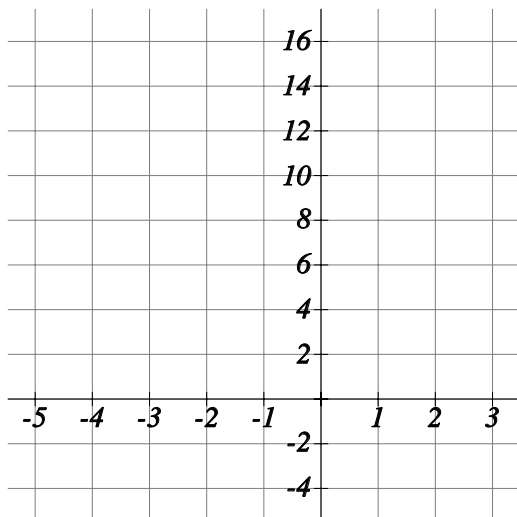


11) a) Complete the table for the equation  $y = x^2 + x + 3$

[1]

$x$	-4	-3	-2	-1	0	1	2
$y$	15		5		3		9

b) Draw  $y = x^2 + x + 3$  on the grid below

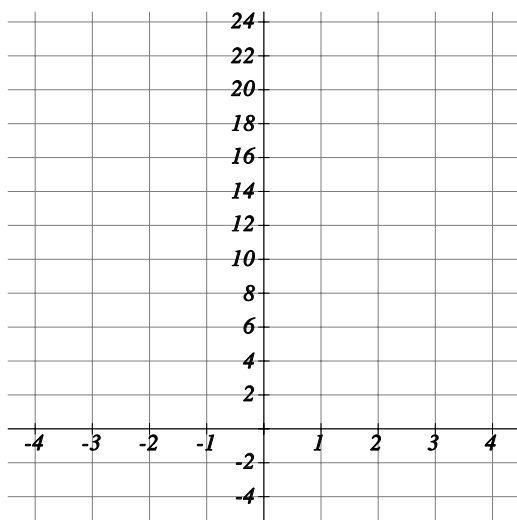


12) a) Complete the table for the equation  $y = 2x^2 - x + 1$

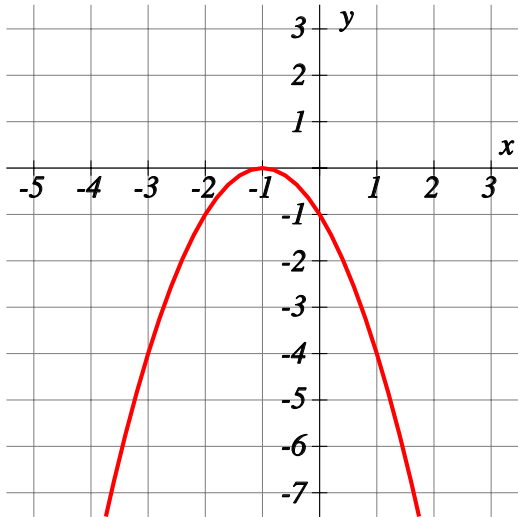
[1]

$x$	-3	-2	-1	0	1	2	3
$y$	22		4		2		16

b) Draw  $y = 2x^2 - x + 1$  on the grid below

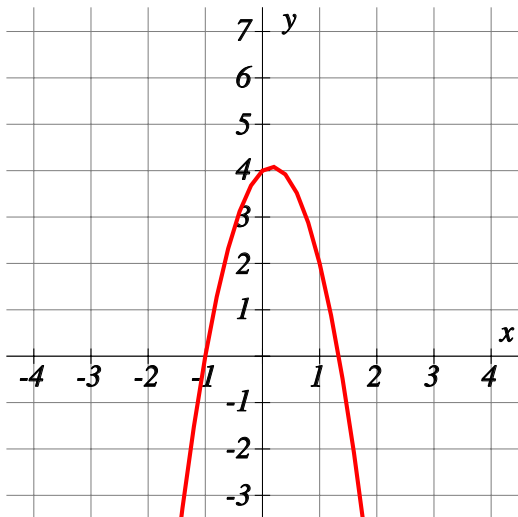


13) Solve the quadratic equation  $-x^2 - 2x - 1 = 0$  using the graph of  $y = -x^2 - 2x - 1$  shown below. Leave your answer to 1 decimal place where necessary.



[1]

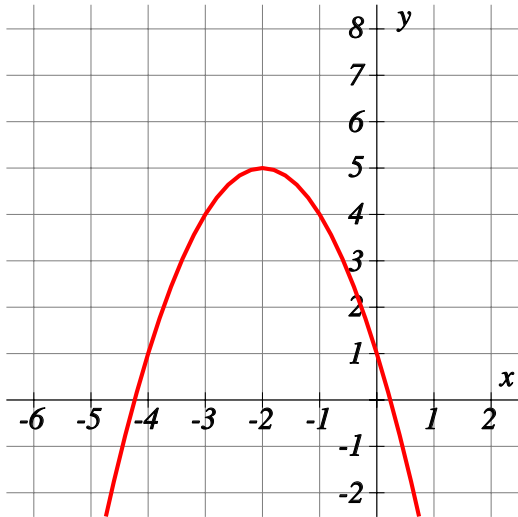
14) Solve the quadratic equation  $-3x^2 + x + 4 = 0$  using the graph of  $y = -3x^2 + x + 4$  shown below. Leave your answer to 1 decimal place where necessary.



[1]



15) Solve the quadratic equation  $-x^2 - 4x + 1 = 0$  using the graph of  $y = -x^2 - 4x + 1$  shown below. Leave your answer to 1 decimal place where necessary.



[1]

## Solutions for the assessment Revision 4: Quadratics expressions, equations and graphs

1) a)  $z = -2$  or  $z = 0$

b)  $x = 12$  or  $x = 0$

c)  $b = 6$  or  $b = -6$

d)  $b = -10$  or  $b = 6$

e)  $y = \frac{7}{4}$  or  $y = \frac{11}{4}$

f)  $z = 12$  or  $z = \frac{9}{2}$

g)  $z = 0$  or  $z = 11$

h)  $z = 0$  or  $z = -11$

i)  $z = 0$  or  $z = -\frac{4}{3}$

j)  $x = 0$  or  $x = \frac{4}{3}$

k)  $c = -9$  or  $c = 9$

l)  $x = -\frac{3}{8}$  or  $x = \frac{3}{8}$

m)  $a = -2$  or  $a = 2$

n)  $y = -\frac{5}{4}$  or  $y = \frac{5}{4}$

o)  $y = -6$  or  $y = -5$

p)  $a = -9$  or  $a = 5$

q)  $c = 3$  or  $c = 5$

r)  $c = 7$  or  $c = -3$

s)  $a = -7$  or  $a = -1$

t)  $b = 2$  or  $b = 2$

u)  $c = -12$  or  $c = 6$

v)  $a = 12$  or  $a = -2$

w)  $b = 1$  or  $b = 6$

x)  $c = -5$  or  $c = 1$

y)  $a = -6$  or  $a = 2$

z)  $a = -\frac{3}{2}$  or  $a = -1$

aa)  $a = \frac{4}{3}$  or  $a = -4$

bb)  $y = -\frac{3}{2}$  or  $y = 5$

cc)  $b = \frac{4}{3}$  or  $b = 2$

dd)  $z = \frac{5}{2}$  or  $z = 3$

ee)  $x = -\frac{3}{2}$  or  $x = -3$

ff)  $c = \frac{2}{3}$  or  $c = -2$

gg)  $x = -\frac{2}{3}$  or  $x = 4$

hh)  $z = -\frac{1}{3}$  or  $z = -1$

ii)  $x = -\frac{5}{7}$  or  $x = 6$

jj)  $c = \frac{5}{2}$  or  $c = 5$

kk)  $c = \frac{1}{2}$  or  $c = -1$

2) a)  $a = 1.06$  or  $a = -1.18$

b)  $z = 0.614$  or  $z = 0.136$

c)  $z = 0.904$  or  $z = -0.737$

d)  $b = 0.677$  or  $b = -1.48$

3) The two numbers are 27 and 29.

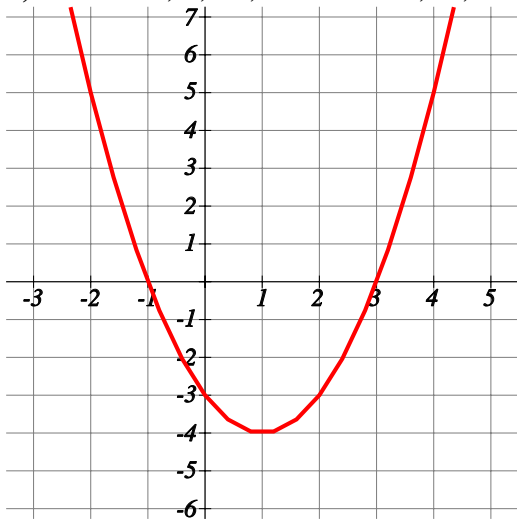
4) The length of the rectangle = 12 cm

5) Length is 21 cm and width is 7 cm

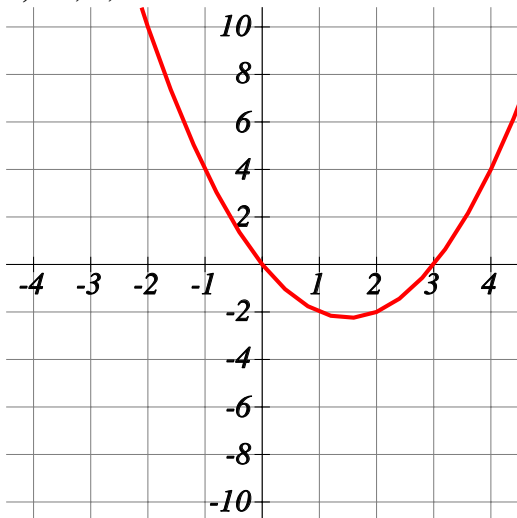
6) Length is 9 cm and width is 2 cm

7) Length of side AC = 3 mm

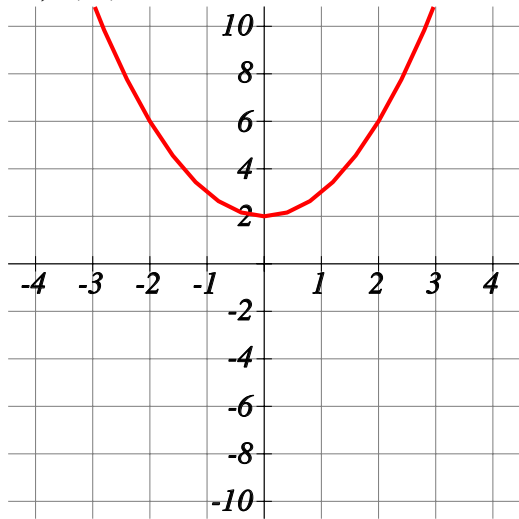
8) 1st line: 1, 1, 16; 2nd line: 0, -4; 3rd line: -3, -3; 4th line: 5, -3, -4, 0, 5



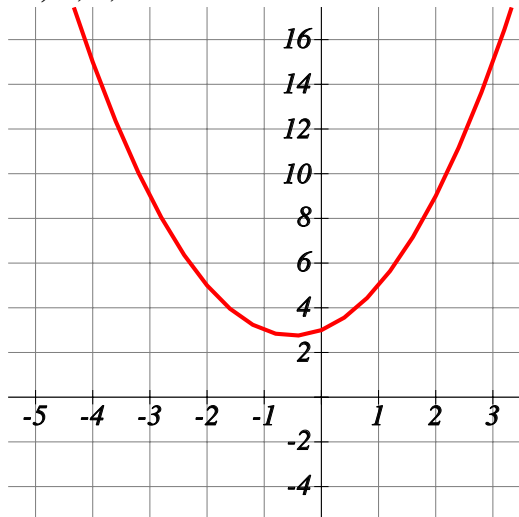
9) 10, 0, -2



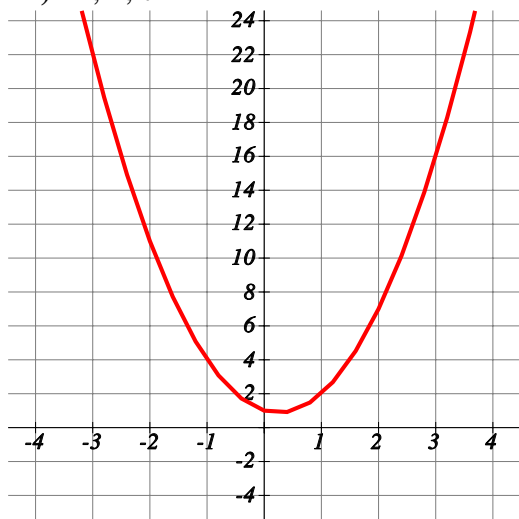
10) 6, 2, 6



11) 9, 3, 5



12) 11, 1, 7



13)  $x = -1$  or  $x = -1$

14)  $x = 1.3$  or  $x = -1$

15)  $x = 0.2$  or  $x = -4.2$