Quadratic Functions

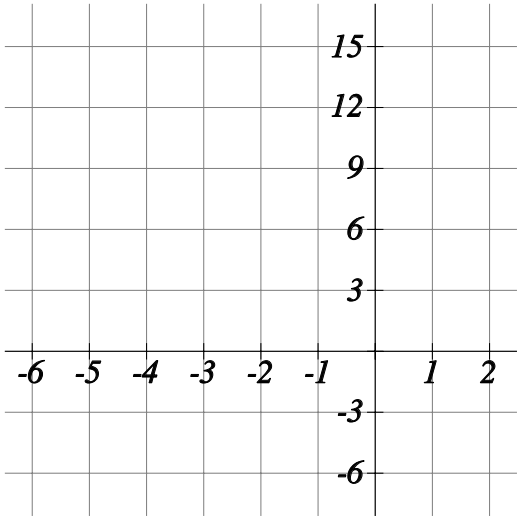
Name:	Class:	Date:

Mark	/ 20	%

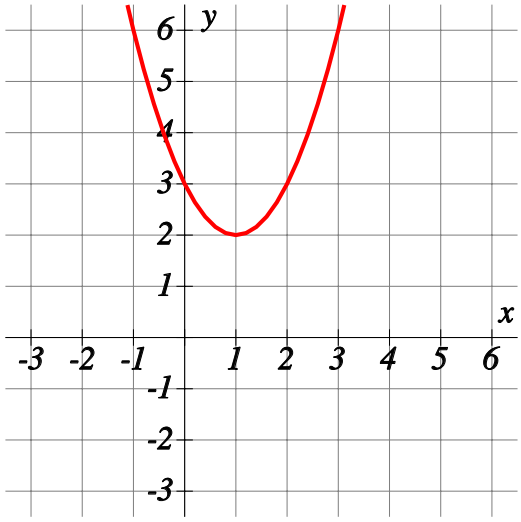
1) a) Complete the table for the equation $y = x^2 + 3x + 2$ [1]

x	-5	-4	-3	-2	-1	0	1
x^2	25		9		1	0	
$+3x$	-15	-12		-6		0	3
+2	2	2		2	2		2
y		14			0		

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



2) What is the minimum value of the function shown below [1]



3) Solve the following [5]

a) $15c^2 - 12c = 0$

b) $a^2 + a - 30 = 0$

c) $7y^2 - 43y + 6 = 0$

d) $6a^2 - 5a - 1 = 0$

e) $81x^2 - 81 = 0$

4) Solve the equation $(9w+5)^2 = 1$ [1]

5) Solve the equation $(y+10)^2 = 82$ [1]

6) Complete the square of [2]

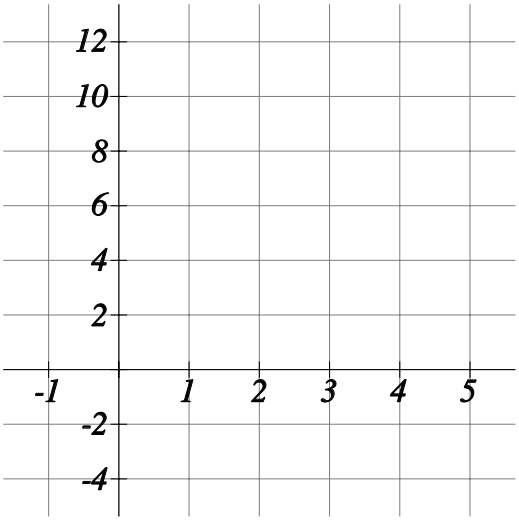
a) $y = 3a^2 + 9a$

b) $y = x^2 - 12x + 32$

7) Write the following equation in the form $y = a(x + h)^2 + k$ [1]

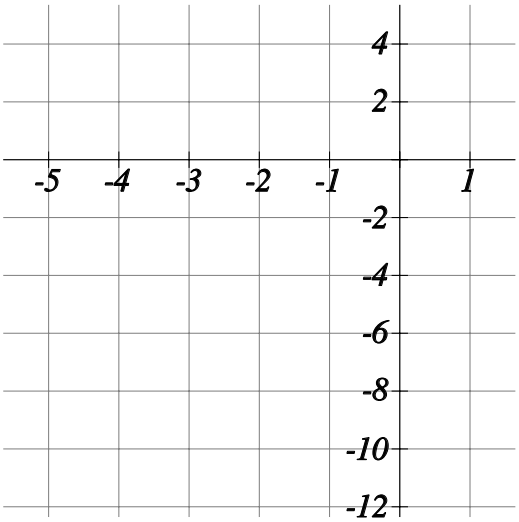
$y = 3x^2 + 39x - 5$

8) Draw the graph $y = x^2 - 4x + 6$ using the method of completing the square.



[1]

9) Draw the graph $y = -x^2 - 4x - 5$ and find its maximum using the method of completing the square.



[1]

10) Consider the equation $x^2 + 5x - 84 = 0$ [1]

a) Rearrange into the form $(x + b)^2 = c$

b) Hence, solve the equation $x^2 + 5x - 84 = 0$

11) Solve the following, leaving your answer in surd form. [1]

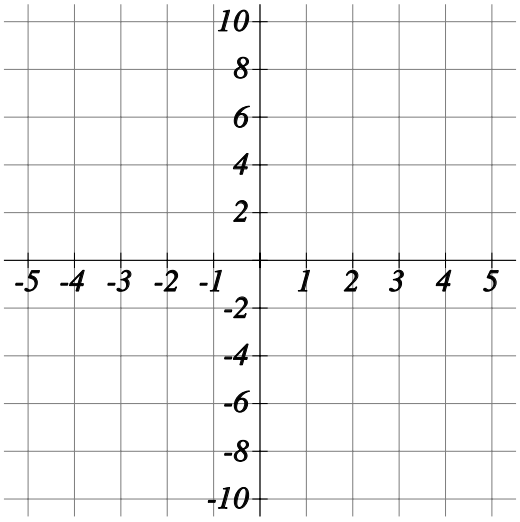
$4a^2 + 5a - 2 = 0$

12) [1]

a) Solve the equation $x^2 + 4x + 3 = 0$.

b) Given $y = x^2 + 4x + 3$ find y when $x = -2$.

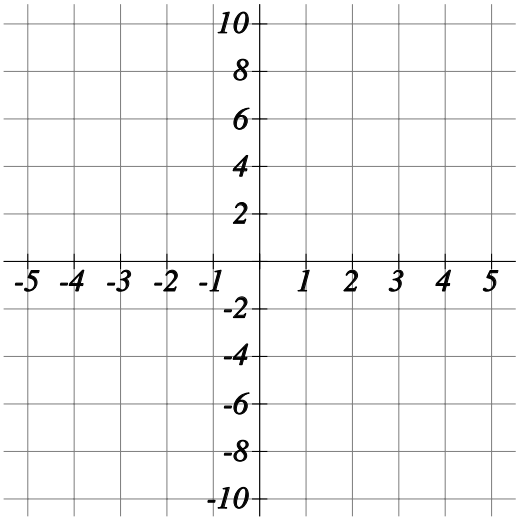
c) Sketch the graph of $y = x^2 + 4x + 3$.



13) Find the value of k for which the following equation has equal roots [1]

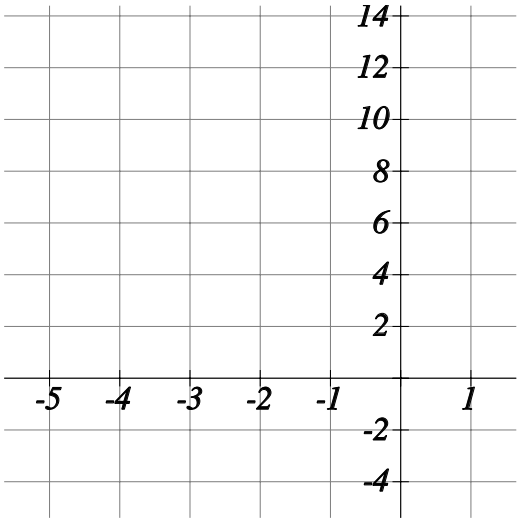
$kx^2 + 12x - 6 = 0$

14) Sketch the graph $y = x^2 - x$



[1]

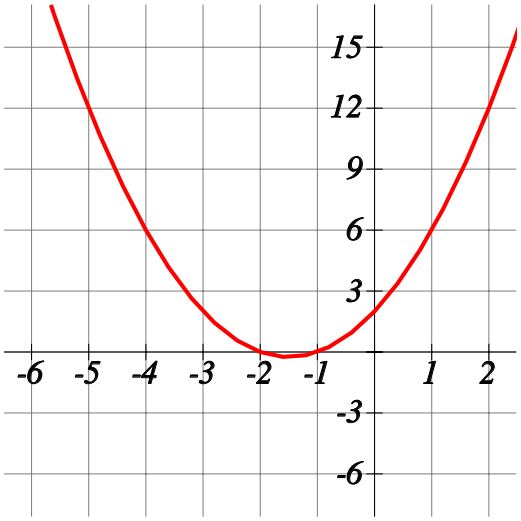
15) Sketch the graph $y = x^2 + 3x + 2$



[1]

Solutions for the assessment Quadratic Functions

1) 1st line: 16, 4, 1; 2nd line: -9, -3; 3rd line: 2,2; 4th line: -5, 2, 0, 2, 6



2) Minimum value is 2

3) a) $c = 0$ or $c = \frac{4}{5}$

b) $a = -6$ or $a = 5$

c) $y = \frac{1}{7}$ or $y = 6$

d) $a = -\frac{1}{6}$ or $a = 1$

e) $x = -1$ or $x = 1$

4) $w = -\frac{2}{3}$ or $w = -\frac{4}{9}$

5) or $y = -10 - \sqrt{82}$

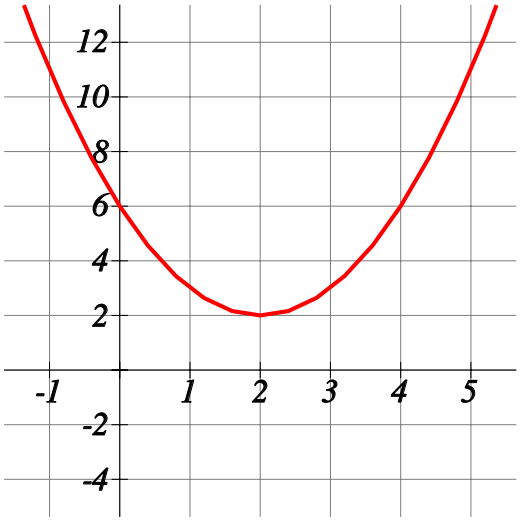
6) a) $3\left(a + \frac{3}{2}\right)^2 - \frac{27}{4}$ or $3(a + 1.5)^2 - 6.75$

b) $(x - 6)^2 - 4$

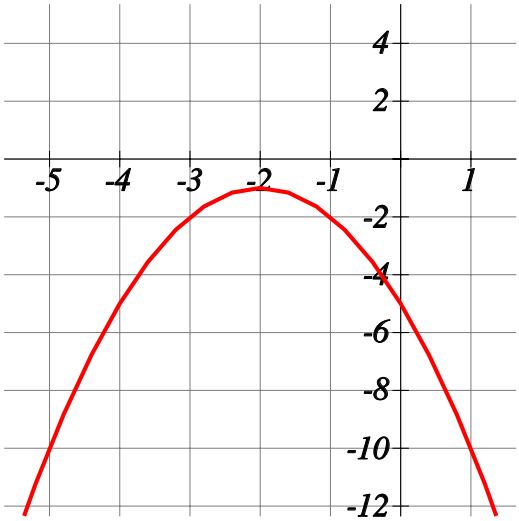
7) $3\left(x + \frac{13}{2}\right)^2 - \frac{527}{4}$ or $3(x + 6.5)^2 - 131.75$

8)

$y = (x - 2)^2 + 2$



9)



The minimum value is -1

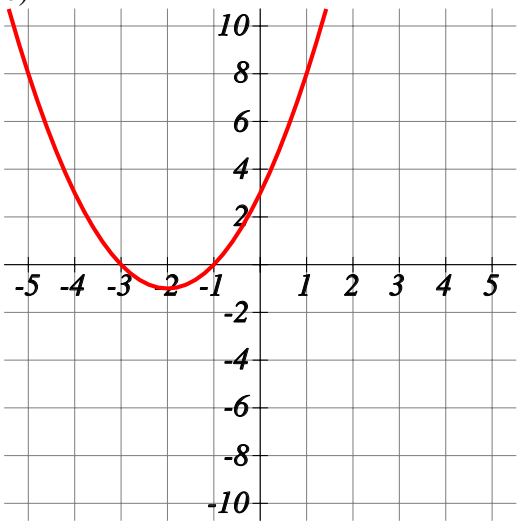
10) a) $(x + 2.5)^2 = 90.25$ or $\left(x + \frac{5}{2}\right)^2 = \frac{361}{4}$

b) $x = -12$ or $x = 7$

11) $a = \frac{-5 + \sqrt{57}}{8}$ or $a = \frac{-5 - \sqrt{57}}{8}$

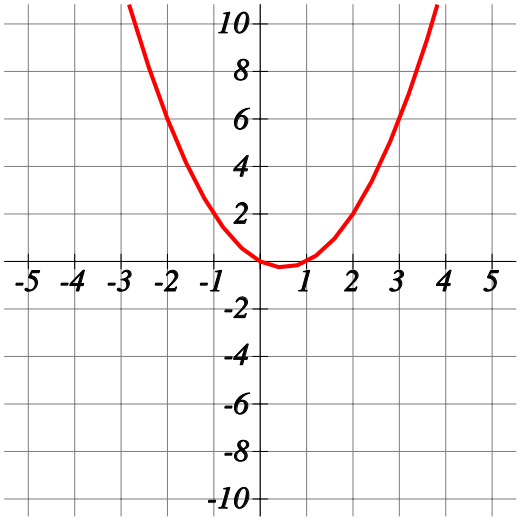
12) a) $x = -3$ or $x = -1$ b) $y = -1$

c)



13) $k = -6$

14)



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