

UNIT 17 *Quadratic Functions*

Overhead Slides

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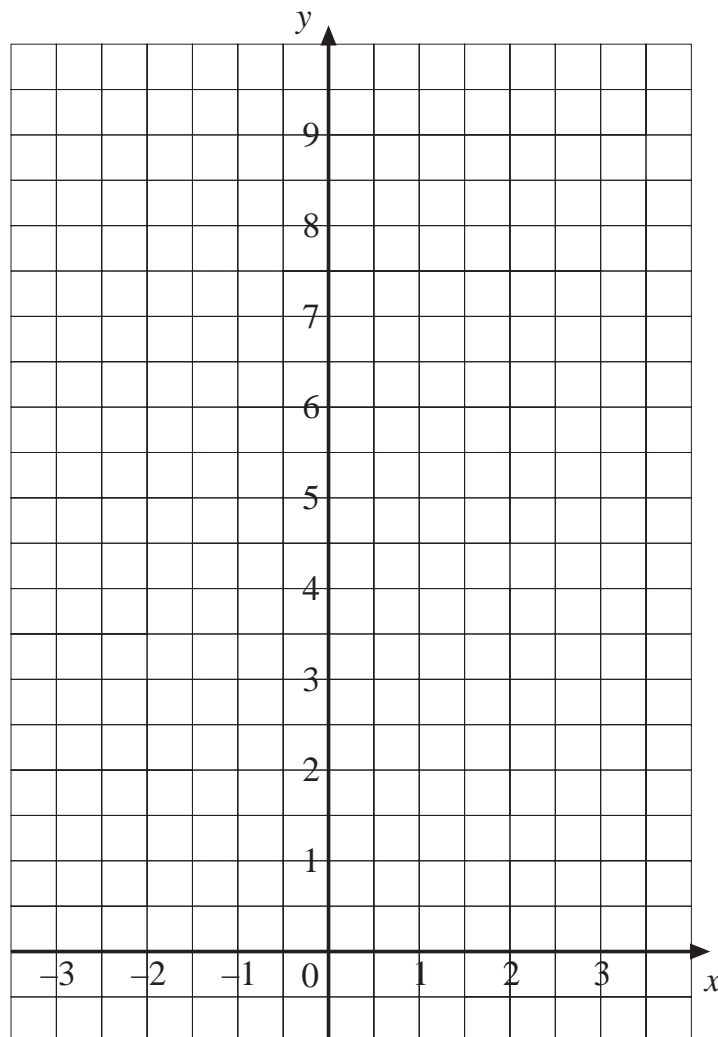
OS 17.1

Quadratic Graphs

1. Complete this table:

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

2. Plot the graphs of $y = x^2$, $y = x^2 + 1$ and $y = (x + 1)^2$.



3. Describe how the 3 curves are related.

OS 17.2*Factorisation*

Factorise each of the following:

1. $4x + 20 =$

2. $4x + 90 =$

3. $x^2 + x =$

4. $3x^2 - 9x =$

5. $x^3 + x^2 =$

6. $14x^3 + 35x =$

OS 17.3

Factorisation Using Table

1. Factorise $x^2 + 7x + 10$ using this table:

×	x	
x	x^2	
		10

$$x^2 + 7x + 10 = (\quad) (\quad)$$

2. Factorise $x^2 - 9x + 20$ using this table:

×	x	
x	x^2	
		20

$$x^2 - 9x + 20 = (\quad) (\quad)$$

3. Factorise $x^2 - x - 6$ using this table:

×	x	
x	x^2	
		-6

$$x^2 - x - 6 = (\quad) (\quad)$$

OS 17.4*Solving Quadratic Equations*

Solve the following quadratic equations by factorising:

1. $x^2 - 6x = 0$

2. $x^2 + 2x + 1 = 0$

3. $x^2 - 4x + 3 = 0$

OS 17.5

Completing the Square 1

Complete each of these statements:

1. $(x + 4)^2 =$

$$x^2 + 8x + 5 = (x + 4)^2 - \square$$

2. $(x - 2)^2 =$

$$x^2 - 4x + 7 = (x - 2)^2 + \square$$

3. $(x + 1)^2 =$

$$x^2 + 2x + 5 = (x + 1)^2 + \square$$

4. $(x - 3)^2 =$

$$x^2 - 6x + 11 = (x - 3)^2 + \square$$

OS 17.6*Completing the Square 2*

Write each expression below in the form $(x + B)^2 + C$.

1. $x^2 + 8x - 20 =$

2. $x^2 + 6x + 14 =$

3. $x^2 - 30x + 20 =$

4. $x^2 - x + 1 =$

OS 17.7 *Solving Quadratics by Completing the Square*

Solve the following quadratic equations by completing the square. (The first one has been started.)

1. $x^2 + 4x - 6 = 0$

$$(x + 2)^2 - \square = 0$$

$$(x + 2)^2 = \square$$

$$x + 2 = \pm \sqrt{\square}$$

$$x = -2 \pm \sqrt{\square}$$

$$x = \quad \text{or}$$

2. $x^2 + 10x - 1 = 0$