



Functions

For instructions, see page 49.

Function

Hyperbola

Parabola

Cubic function

Set of axes

Asymptote

Intercepts

Local maximum

Translation

Local minimum

Turning points

Point of inflexion

Positive gradient

Change of scale

Decreasing function

Increasing function

Negative gradient

Symmetry

Discontinuity

Reflection

Circle

Roots of the equation

Stationary points

Exponential curve

Logarithmic function

Transformations

Trigonometric curves

Domain

Range

Polynomial

Square root function

Quadratic function

Limit as $x \rightarrow \infty$

Relation

Modelling



Sequences and series

For instructions, see page 49.

Sequence

S_{∞}

Series

First term

Geometric

Σ

Arithmetic

t_1

Sum to infinity

General term

Common difference

Finite series

Common ratio

Infinite series

Sigma

Limit

Compound interest

$\frac{a}{1-r}$

Summation

$a + (n-1)d$

Increasing

ar^{n-1}

Decreasing

a

Oscillating

r

Convergent

$\langle 1, 3, 5, 7, \dots \rangle$

Divergent

$\langle 27, 9, 3, 1, \dots \rangle$

S_n



Algebra

For instructions, see page 49.

Factor

Simplify

Quadratic equation

Polynomial

Expand

Solve

Term

Coefficient

Like terms

Variable

$6x, -3x$

Inverse

Order

Unlike terms

Change the subject of the formula

Complete the square

Factorise

Solutions

Pronumeral

Brackets

$4x, 5y$

Equation

$7x + 12 = 38$

$x^4 + 4x^2 + 8$

Determinant

Nature of the roots

Common factors

Algebraic expression

Rearranging equations



Statistics

For instructions, see page 49.

Statistics

Moving average

Bar graph

Histogram

Mean

Median

Time series

Mode

Standard deviation

Range

Quartiles

Percentiles

Inference

Measures of spread

**Measures of central
tendency**

Relative frequency

Long term trend

Frequency

Pie graph

Stem and leaf graph

Data

Survey

Random sample

Systematic sample

Convenience sample

Short term trend

Cumulative frequency

Prediction

Data processing

Data display

Summary

Sample size



ANSWERS

Mix and Match

p1 Functions

- A 6, 10, 13, 16 C 1, 11, 19, 22 E 3, 14, 20, 23
 B 2, 5, 12, 17 D 8, 15, 18, 24 F 4, 7, 9, 21

p3 Hyperbolas (statements 7, 19, and 23 are interchangeable)

- A 1, 2, 7, 19 C 6, 11, 15, 18 E 4, 5, 12, 22
 B 3, 14, 20, 23 D 10, 17, 21, 24 F 8, 9, 13, 16

p5 Parabolas/Hyperbolas

- A 6, 8, 14, 15 C 7, 10, 12, 19 E 2, 11, 17, 24
 B 3, 5, 20, 21 D 1, 9, 16, 22 F 4, 13, 18, 23

p7 Trigonometric curves (statements 14, 5 and 21 are interchangeable)

- A 6, 9, 18, 23 C 7, 10, 11, 19 E 1, 12, 17, 20
 B 4, 14, 15, 24 D 3, 8, 13, 16 F 2, 5, 21, 22

p9 Gradient and graphs (statements 19 and 21 are interchangeable)

- A 4, 8, 10, 13 C 3, 6, 12, 24 E 2, 11, 14, 15
 B 9, 16, 18, 23 D 5, 7, 19, 20 F 1, 17, 21, 22

p11 Coordinate geometry (1)

- A 6, 10, 17, 18 C 2, 5, 14, 22 E 1, 11, 19, 24
 B 4, 9, 12, 13 D 3, 7, 20, 23 F 8, 15, 16, 21

p13 Coordinate geometry (2) (statements 16 and 17 are interchangeable, 6 and 24 are interchangeable)

- A 1, 4, 11, 16 C 8, 9, 20, 21 E 6, 15, 18, 24
 B 3, 7, 13, 22 D 2, 10, 12, 19 F 5, 14, 17, 23

p15 Sequences and series (statements 1 and 8 are interchangeable)

- A 1, 4, 7, 13, 21 C 5, 6, 12, 20 E 14, 15, 19, 22
 B 9, 16, 17, 24 D 2, 3, 8, 23 F 4, 10, 11, 18

p17 Sequences

- A 3, 6, 10, 23 C 15, 7, 9, 18 E 5, 11, 20, 22
 B 2, 12, 13, 14 D 4, 8, 16, 19 F 1, 17, 21, 24

p19 Algebra: Terminology (1)

- A 3 $6x - 18$
 12 $p^2 + 3p - 54$
 16 $p^3 - 7p^2$
 21 $3x - 21 + 2x^2 + 2x$
 $= 2x^2 + 5x - 21$

- B 1 $x(x - 7) = 0$
 $x = 0, 7$
 7 $x = -3, 2$
 8 $x^2 + 15x + 50 = 0$
 $(x + 5)(x + 10) = 0$
 $x = -5, -10$
 13 $3a = 21$
 $a = 7$

- C 9 x^{43}
 15 $23a - 16b$
 17 $\frac{p}{5}$
 23 $3x$

- D 4 $(x + 3)(x - 3)$
 10 $(3x + 2)(x - 4)$
 20 $a(x - y) - 3(x - y)$
 $= (a - 3)(x - y)$
 22 $(4 - x)(5 + x)$

- E 2 25.11
 6 $\frac{3}{4}$
 14 $35 - (-6)$
 $= 41$
 19 $40\frac{5}{9}$

- F 5 $\frac{x^2 + 3x + 2}{2x}$
 $= \frac{(x + 1)(x + 2)}{2x}$
 11 $\frac{3x + 3 - 2x + 6}{6}$
 $= \frac{x + 9}{6}$

- 18 $\frac{x^3}{21}$
 24 $\frac{5x^2y}{3} \times \frac{24}{15xy^2}$
 $= \frac{8x}{3y}$

p21 Algebra: Terminology (2) (statements 14 and 22 are interchangeable)

- A 5 $2x^3 - 3x^2 + 14x - 21$
 6 $3a^2 - 6ab - 8b^2 + 4ab$
 $= 3a^2 - 2ab - 8b^2$
 11 $3x^3 + 3x^2y + 9x^2 + 9xy - 9y^2 - 27y$
 19 $25u^2 - 4v^2$

- B 10 $x = 15$
 15 $10 - 2x = 6x - 6$
 $16 = 8x$
 $x = 2$
 20 $3(x - 2) = 4(x + 1)$
 $3x - 6 = 4x + 4$
 $x = -10$
 23 $(x + 3)(x + 4) = 0$
 $x = -3, -4$

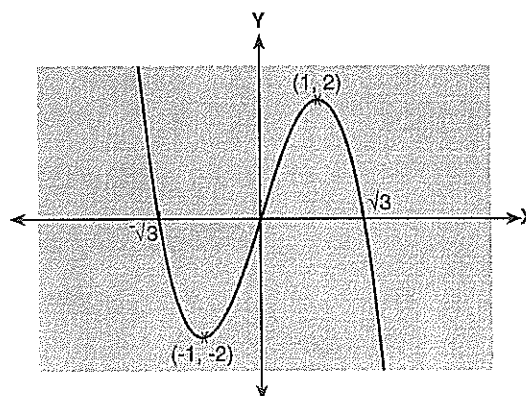
- C 4 $\frac{10t}{21}$
 9 $5x$
 14 $9t^2 - 11t + 3$
 21 $12x + 18 - 35x + 7x^2$
 $= 7x^2 - 23x + 18$

- D 7 $(x + 2)(x - 2)$
 13 $(s - 10)(s - 4)$
 18 $a(x + y) + 2c(x + y)$
 $= (x + y)(a + 2c)$
 24 $x(x + 7)$

- E 3 147
 8 18
 16 -72.81
 17 $\frac{1}{28}$
 F 1 $\frac{9x^2 - 8y^2}{6xy}$
 $= \frac{(3x + \sqrt{8y})(3x - \sqrt{8y})}{6xy}$
 2 $\frac{3a^2 + b^2}{3ab}$
 12 $\frac{x - x - 3}{x(x + 3)}$
 $= \frac{-3}{x(x + 3)}$
 22 $\frac{10x}{21}$

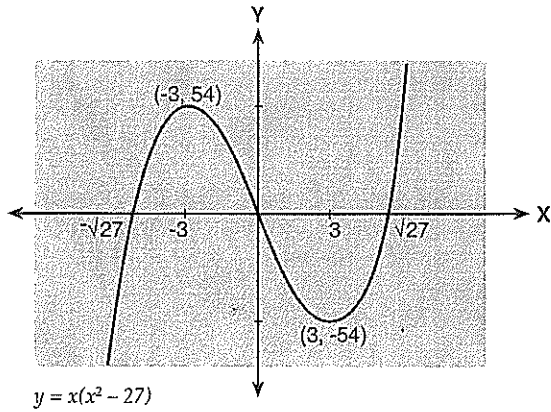
Information Sharing

q1

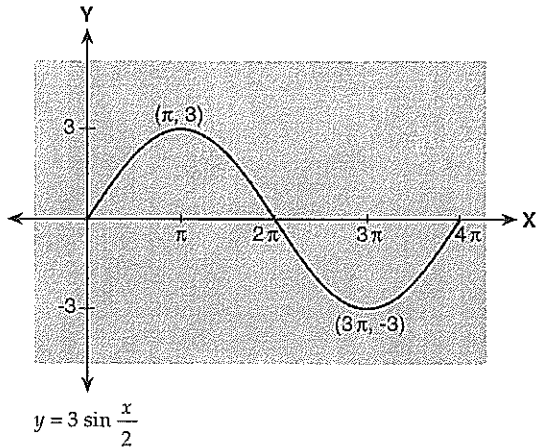


$$y = -x(x^2 - 3)$$

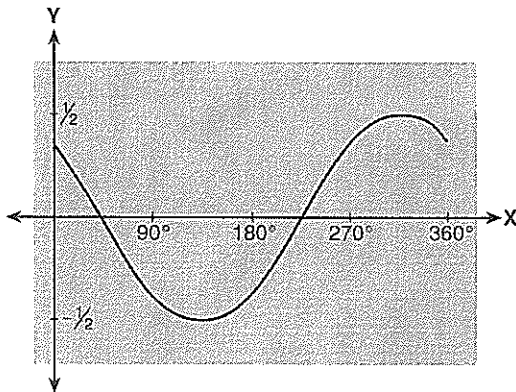
q2



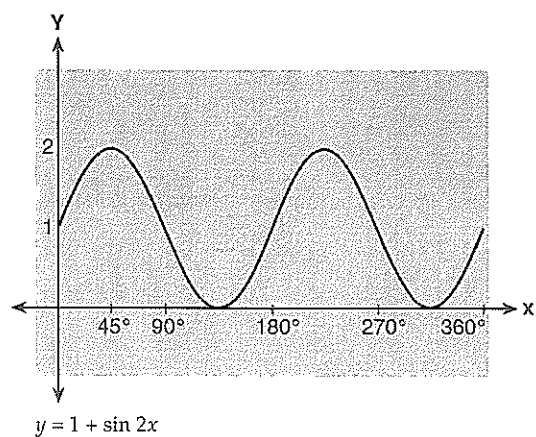
q3



q4



q5



- q6 13.23 m(2dp)
- q7 Area = 134 m² Cost = \$2003.57
- q8 Volume = 250 cm³
- q9 200 m x 200 m Area = 40 000 m²
- q10 $y = x^2$ $y = 4x - 4$
- q11 Area = $33\frac{1}{3}$ units²
- q12 $y = \frac{4000 + 60x}{x - 20}$ $x = 1000$
 $y = \$ 65.31$
- q13 $y = \frac{5x + 400}{x - 20}$
 $x = 20$ no paying attenders
 $x = 500$ $y = \$ 6.04$
- q14 at 9 am 3069 waiting
- q15 arithmetic, 5 insects every 10 minutes,
 $y = \frac{x}{2}$, 390 insects at 8 pm
- q16 0.57
- q17 $\frac{33}{203}$
- q18 $\frac{1}{15}$
- q19 250 cars were booked
- q20 537 people. 20% below 55 beats.

Sequencing

p 36 Completing the square

- 1 C A G E B F D
- 2 E B D G A F C

p38, 39 Rearranging equations

- 1 E B A D C
- 2 A E D B C
- 3 D G F C A E B

p37 Locating turning points

- 1 B E A G D C F
- 2 F D G A E B C

p40 Coordinate geometry

- 1 C F E A D B
- 2 E A B D F C

p38 Standard deviation proof

- D G C A E B F

Double Sequencing

p 41 Coordinate geometry

- A B E C D F
- 3 4 6 2 5 1

p 47 Optimisation

- E A D C H G B F
- 1 3 8 4 6 1 2 5 7
- 2 4 2 5 3 7 6 1 8
- 3 7 4 6 1 3 8 5 2

P 43 Simultaneous equations
(line/curve)

- C D H F A E G B
- 1 6 3 2 8 5 4 7 1
- 2 8 7 2 6 3 1 4 5
- 3 5 4 1 3 7 8 2 6

p49 Trigonometry rules

- C F B D G A E
- 1 2 7 3 4 1 6 5
- 2 1 5 6 4 2 7 3
- 3 5 2 4 7 1 6 3

p45 Standard normal distribution

- G E A C D F B
- 1 5 4 7 1 2 6 3
- 2 2 5 7 4 3 6 1
- 3 5 1 3 6 4 2 7