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R

1

2

3

4

5

6

7

8

9

10

11

12

13

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Functions

A.1 Domain and range
A.2 Identify functions
A.3 Find the gradient of a linear function
A.4 Graph a linear function
A.5 Write the equation of a linear function
A.6 Linear functions over unit intervals
A.7 Evaluate functions
A.8 Find values using function graphs
A.9 Complete a table for a function graph
A.10 Add, subtract, multiply and divide functions
A.11 Composition of functions
A.12 Identify inverse functions
A.13 Find values of inverse functions from tables
A.14 Find values of inverse functions from graphs
A.15 Find inverse functions and relations

Families of functions

B.1 Translations of functions
B.2 Reflections of functions
B.3 Dilations of functions
B.4 Transformations of functions
B.5 Function transformation rules
B.6 Describe function transformations

Quadratic functions

C.1 Characteristics of quadratic functions
C.2 Find the maximum or minimum value of a quadratic function
C.3 Graph a quadratic function
C.4 Match quadratic functions and graphs
C.5 Solve a quadratic equation using square roots
C.6 Solve a quadratic equation by factorising
C.7 Solve a quadratic equation by completing the square
C.8 Solve a quadratic equation using the quadratic formula
C.9 Using the discriminant

Simultaneous equations

I.1 Solve simultaneous equations by graphing
I.2 Solve simultaneous equations by graphing: word problems
I.3 Classify simultaneous equations
I.4 Solve simultaneous equations using substitution
I.5 Solve simultaneous equations using substitution: word problems
I.6 Solve simultaneous equations using elimination
I.7 Solve simultaneous equations using elimination: word problems
I.8 Solve simultaneous equations in three variables using substitution
I.9 Solve simultaneous equations in three variables using elimination
I.10 Determine the number of solutions to simultaneous equations in three variables

Trigonometry

J.1 Convert between radians and degrees
J.2 Radians and arc length
J.3 Quadrants
J.4 Coterminal and reference angles
J.5 Find trigonometric ratios using right triangles
J.6 Find trigonometric ratios using the unit circle
J.7 Find sin, cos and tan using reference angles
J.8 Find csc, sec and cot using reference angles
J.9 Inverses of sin, cos and tan
J.10 Inverses of csc, sec and cot
J.11 Solve trigonometric equations
J.12 Trigonometric ratios: find a side length
J.13 Trigonometric ratios: find an angle measure
J.14 Solve a right triangle
J.15 Law of Sines
J.16 Law of Cosines
J.17 Solve a triangle
J.18 Area of a triangle: sine formula
J.19 Area of a triangle: Heron's formula

Trigonometric functions

Probability

Q.1 Introduction to probability
Q.2 Calculate probabilities of events
Q.3 Combinations and permutations
Q.4 Find probabilities using combinations and permutations
Q.5 Find probabilities using two-way frequency tables
Q.6 Identify independent events
Q.7 Find conditional probabilities
Q.8 Independence and conditional probability
Q.9 Find conditional probabilities using two-way frequency tables
Q.10 Find probabilities using the addition rule

Probability distributions

R.1 Identify discrete and continuous random variables
R.2 Write a discrete probability distribution
R.3 Graph a discrete probability distribution
R.4 Expected values of random variables
R.5 Variance of random variables
R.6 Standard deviation of random variables
R.7 Write the probability distribution for a game of chance
R.8 Expected values for a game of chance
R.9 Choose the better bet
R.10 Find probabilities using the binomial distribution
R.11 Mean, variance and standard deviation of binomial distributions
R.12 Find probabilities using the normal distribution I
R.13 Find probabilities using the normal distribution II
R.14 Find z-values
R.15 Find values of normal variables
R.16 Distributions of sample means
R.17 The Central Limit Theorem
R.18 Use normal distributions to approximate binomial distributions

Statistics

S.1 Identify biased samples

Polynomials

D.1 Divide polynomials using long division

D.2 Write a polynomial from its roots

D.3 Find the roots of factorised polynomials

D.4 Rational root theorem

D.5 Complex conjugate theorem

D.6 Conjugate root theorems

D.7 Descartes' Rule of Signs

D.8 Fundamental Theorem of Algebra

D.9 Match polynomials and graphs

D.10 Factorise sums and differences of cubes

D.11 Solve equations with sums and differences of cubes

D.12 Factorise using a quadratic pattern

D.13 Solve equations using a quadratic pattern

D.14 Pascal's triangle

D.15 Pascal's triangle and the Binomial Theorem

D.16 Binomial Theorem I

D.17 Binomial Theorem II

Rational functions

E.1 Rational functions: asymptotes and excluded values

E.2 Solve rational equations

E.3 Check whether two rational functions are inverses

Exponential and logarithmic functions

F.1 Domain and range of exponential and logarithmic functions

F.2 Convert between exponential and logarithmic form

F.3 Evaluate logarithms

F.4 Change of base formula

F.5 Product property of logarithms

F.6 Quotient property of logarithms

F.7 Power property of logarithms

F.8 Evaluate logarithms using properties

F.9 Solve exponential equations by rewriting the base

F.10 Solve exponential equations using logarithms

F.11 Solve logarithmic equations with one logarithm

F.12 Solve logarithmic equations with multiple logarithms

F.13 Identify linear and exponential functions

F.14 Exponential functions over unit intervals

F.15 Describe linear and exponential growth and decay

F.16 Exponential growth and decay: word problems

F.17 Compound interest: word problems

Radical functions

G.1 Domain and range of radical functions

Trigonometric identities

K.1 Find properties of sine functions

K.2 Write equations of sine functions from graphs

K.3 Write equations of sine functions using properties

K.4 Graph sine functions

K.5 Find properties of cosine functions

K.6 Write equations of cosine functions from graphs

K.7 Write equations of cosine functions using properties

K.8 Graph cosine functions

K.9 Graph sine and cosine functions

Trigonometric identities

L.1 Complementary angle identities

L.2 Symmetry and periodicity of trigonometric functions

L.3 Trigonometric identities I

L.4 Trigonometric identities II

Parabolas and circles

M.1 Find properties of parabolas

M.2 Write equations of parabolas in vertex form

M.3 Graph parabolas

M.4 Find properties of circles

M.5 Write equations of circles in standard form

M.6 Graph circles

Two-dimensional vectors

N.1 Find the magnitude of a vector

N.2 Find the direction angle of a vector

N.3 Find the component form of a vector

N.4 Find the component form of a vector from its magnitude and direction angle

N.5 Find a unit vector

N.6 Add and subtract vectors

N.7 Multiply a vector by a scalar

N.8 Find the magnitude or direction of a vector scalar multiple

N.9 Find the magnitude and direction of a vector sum

N.10 Linear combinations of vectors

N.11 Graph a resultant vector using the triangle method

N.12 Graph a resultant vector using the parallelogram method

Three-dimensional vectors

O.1 Find the magnitude of a three-dimensional vector

O.2 Find the component form of a three-dimensional vector

O.3 Find a three-dimensional unit vector

O.4 Add and subtract three-dimensional vectors

O.5 Scalar multiples of three-dimensional vectors

O.6 Linear combinations of three-dimensional vectors

Statistics

S.2 Variance and standard deviation

S.3 Identify an outlier

S.4 Identify an outlier and describe the effect of removing it

S.5 Outliers in scatter plots

S.6 Match correlation coefficients to scatter plots

S.7 Calculate correlation coefficients

S.8 Find the equation of a regression line

S.9 Interpret regression lines

S.10 Analyse a regression line of a data set

S.11 Analyse a regression line using statistics of a data set

S.12 Find confidence intervals for population means

S.13 Find confidence intervals for population proportions

Introduction to derivatives

T.1 Average rate of change I

T.2 Average rate of change II

T.3 Find instantaneous rates of change

T.4 Velocity as a rate of change

T.5 Find values of derivatives using limits

T.6 Find the gradient of a tangent line using limits

T.7 Find equations of tangent lines using limits

Derivative rules

U.1 Sum and difference rules

U.2 Product rule

U.3 Quotient rule

U.4 Power rule I

U.5 Power rule II

U.6 Chain rule

U.7 Inverse function rule

Calculate derivatives

V.1 Find derivatives of polynomials

V.2 Find derivatives of rational functions

V.3 Find derivatives of trigonometric functions I

V.4 Find derivatives of trigonometric functions II

V.5 Find derivatives of exponential functions

V.6 Find derivatives of logarithmic functions

V.7 Find derivatives of inverse trigonometric functions

V.8 Find derivatives of radical functions

V.9 Find derivatives using the product rule I

V.10 Find derivatives using the product rule II

V.11 Find derivatives using the quotient rule I

V.12 Find derivatives using the quotient rule II

V.13 Find derivatives using the chain rule I

V.14 Find derivatives using the chain

G.2 Solve radical equations

Roots and rational indices

H.1 Roots of integers

H.2 Roots of rational numbers

H.3 Find roots using a calculator

H.4 Evaluate rational indices

H.5 Operations with rational indices

H.6 Nth roots

H.7 Simplify radical expressions with variables

H.8 Simplify expressions involving rational indices

Sequences and series

P.1 Find terms of a sequence

P.2 Find terms of a recursive sequence

P.3 Identify a sequence as explicit or recursive

P.4 Find a recursive formula

P.5 Find recursive and explicit formulas

P.6 Convert a recursive formula to an explicit formula

P.7 Convert an explicit formula to a recursive formula

P.8 Convert between explicit and recursive formulas

P.9 Introduction to sigma notation

P.10 Identify arithmetic and geometric series

P.11 Find the sum of a finite arithmetic or geometric series

P.12 Introduction to partial sums

P.13 Partial sums of arithmetic series

P.14 Partial sums of geometric series

P.15 Partial sums: mixed review

P.16 Convergent and divergent geometric series

P.17 Find the value of an infinite geometric series

P.18 Write a repeating decimal as a fraction

rule II

Derivative strategies

W.1 Find derivatives using implicit differentiation

W.2 Find tangent lines using implicit differentiation

W.3 Find derivatives using logarithmic differentiation

Calculate higher derivatives

X.1 Find higher derivatives of polynomials

X.2 Find higher derivatives of rational and radical functions

X.3 Find second derivatives of trigonometric, exponential and logarithmic functions

X.4 Find higher derivatives using patterns