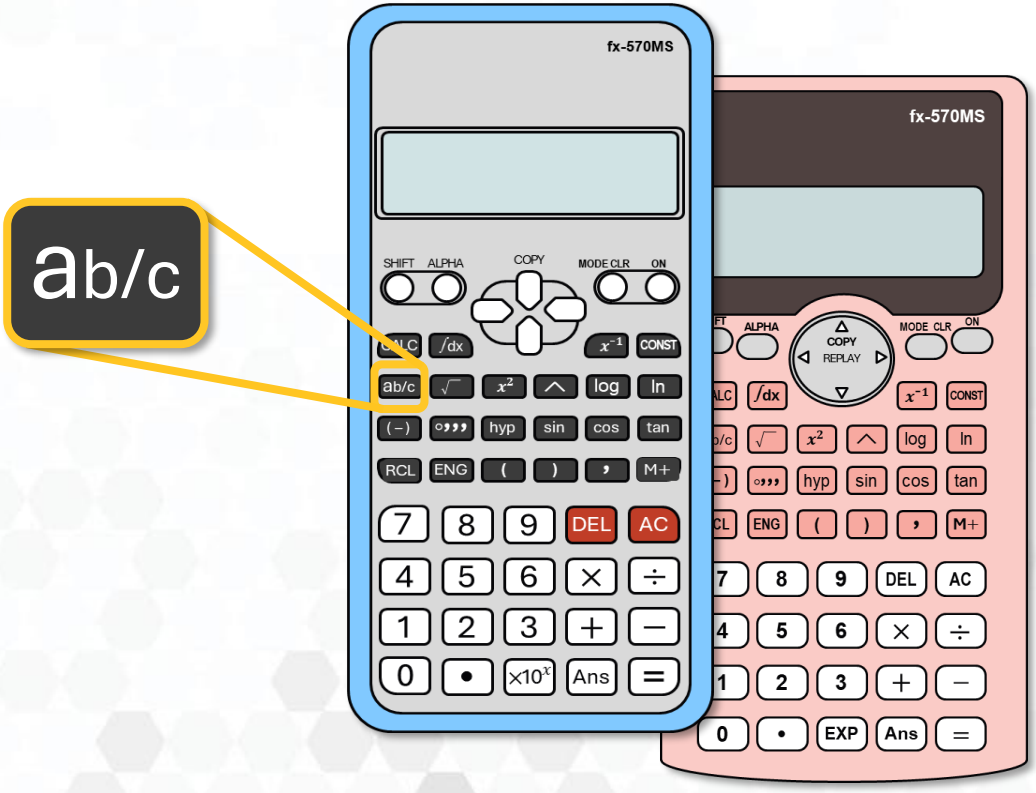
SMART CALCULATOR

LINEAR DISPLAY



SITI NOOR DINA AHMAD • NURUL AITYQAH YAACOB
YUSRINA ANDU • SITI ZAHARAH MOHD RUSLAN • ZURAIDA JAAFAR

SMART CALCULATOR
LINEAR DISPLAY

e ISBN 978-629-95953-1-1

Authors
SITI NOOR DINA AHMAD
NURUL AITYQAH YAACOB
YUSRINA ANDU
SITI ZAHARAH MOHD RUSLAN
ZURAIDA JAAFAR

Published by
UiTM Cawangan Negeri Sembilan
Faculty of Computer and Mathematical Sciences
72000 Kuala Pilah, Negeri Sembilan, MALAYSIA

fskm_kp@uitm.edu.my

PREFACE

The use of scientific calculators has become indispensable in the learning and application of mathematics at various levels of education. As technology continues to advance, modern calculators now feature improved functionalities such as linear displays, which offer clearer, more intuitive interfaces for users. Despite these advancements, many students and even educators still face challenges in fully utilizing these tools to their maximum potential.

This book, **SMART CALCULATOR (LINEAR DISPLAY)**, is designed as a practical guide to help students, particularly those enrolled in mathematics courses, navigate and optimize the use of linear display calculators, such as the Casio fx-570 series. It provides step-by-step instructions, tips, and examples tailored to common mathematical operations and problem solving techniques encountered in academic settings.

While the primary audience for this guide is students, we believe it will also benefit educators, parents, and the general public who seek to enhance their understanding and effective use of modern calculators.

We sincerely hope that this book will serve as a valuable reference and empower readers to approach mathematical challenges with greater confidence and efficiency.

TABLE OF CONTENTS

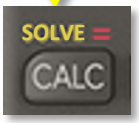
TABLE OF CONTENTS

TABLE OF CONTENTS

BASIC CALCULATOR

SHIFT AND ALPHA

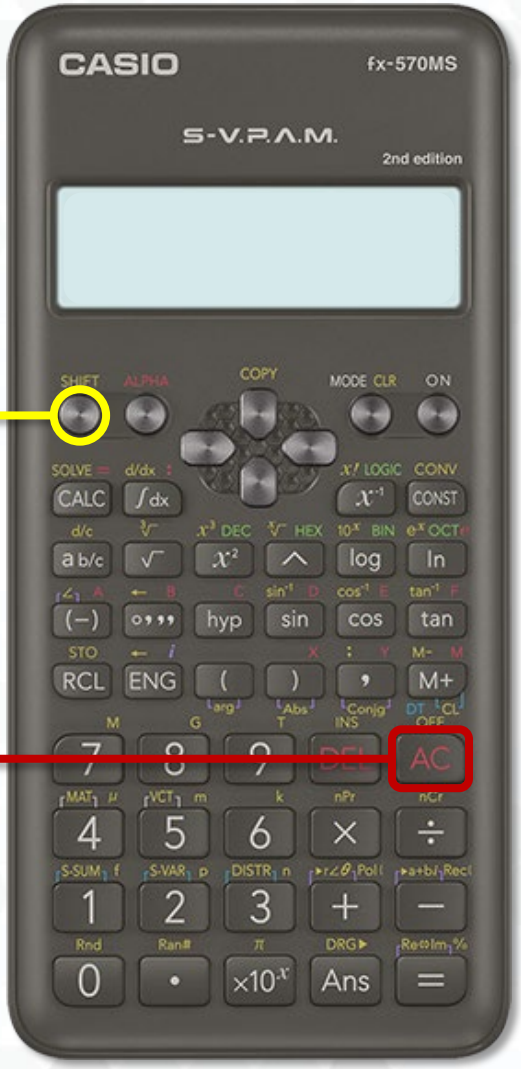
SHIFT key
for yellow text



ALPHA key
for red text

POWER OFF

By default, automatically off in 10 minutes



Press **SHIFT** **OFF** **AC**

AC = All Clear

CLEAR DATA

Press **SHIFT** **CLR**

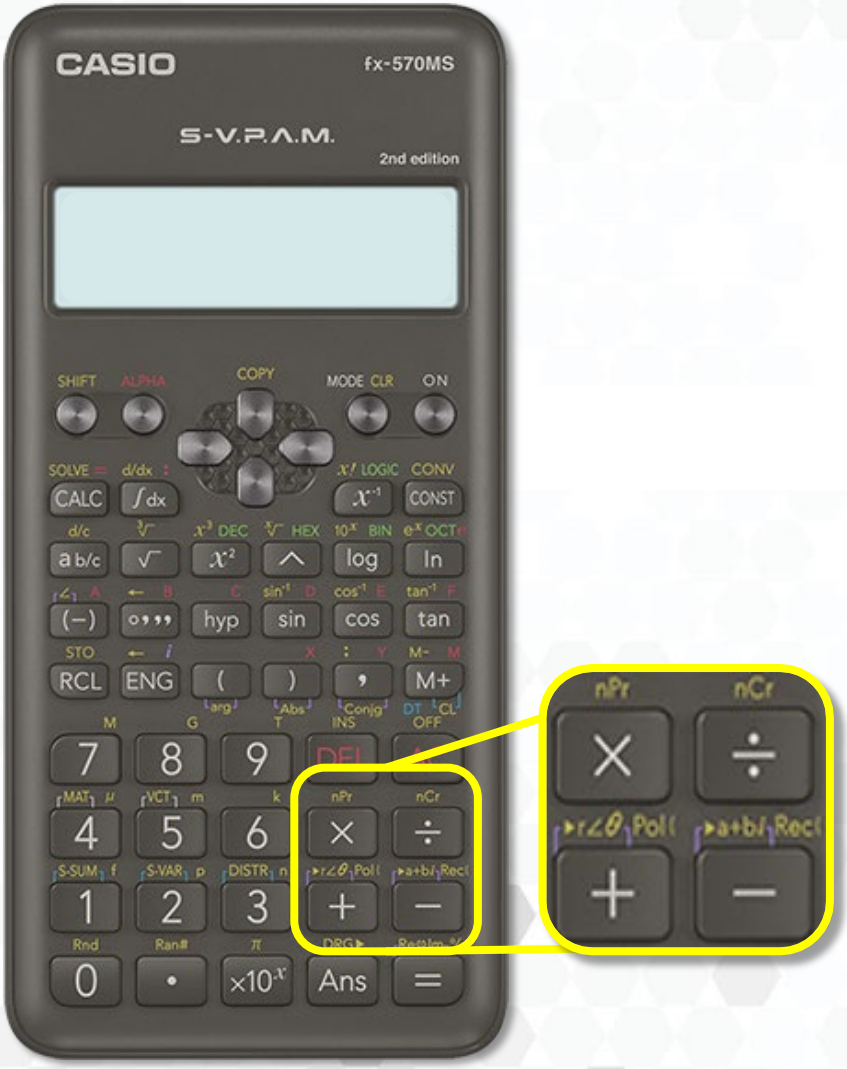
Mcl	1	To clear memory
Mode	2	To clear mode
All	3	To clear all data

The best choice

Press **3** **=**

CLR = Clear
Mcl = Memory clear

BASIC OPERATION

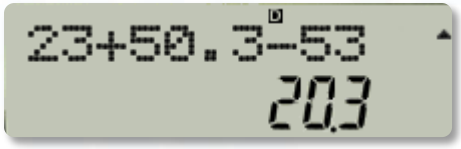


BASIC OPERATION

1) Calculate $23 + 50.3 - 53$

Press [2] [3] [+] [5] [0] [•] [3]

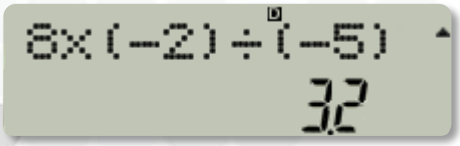
[−] [5] [3] [=]



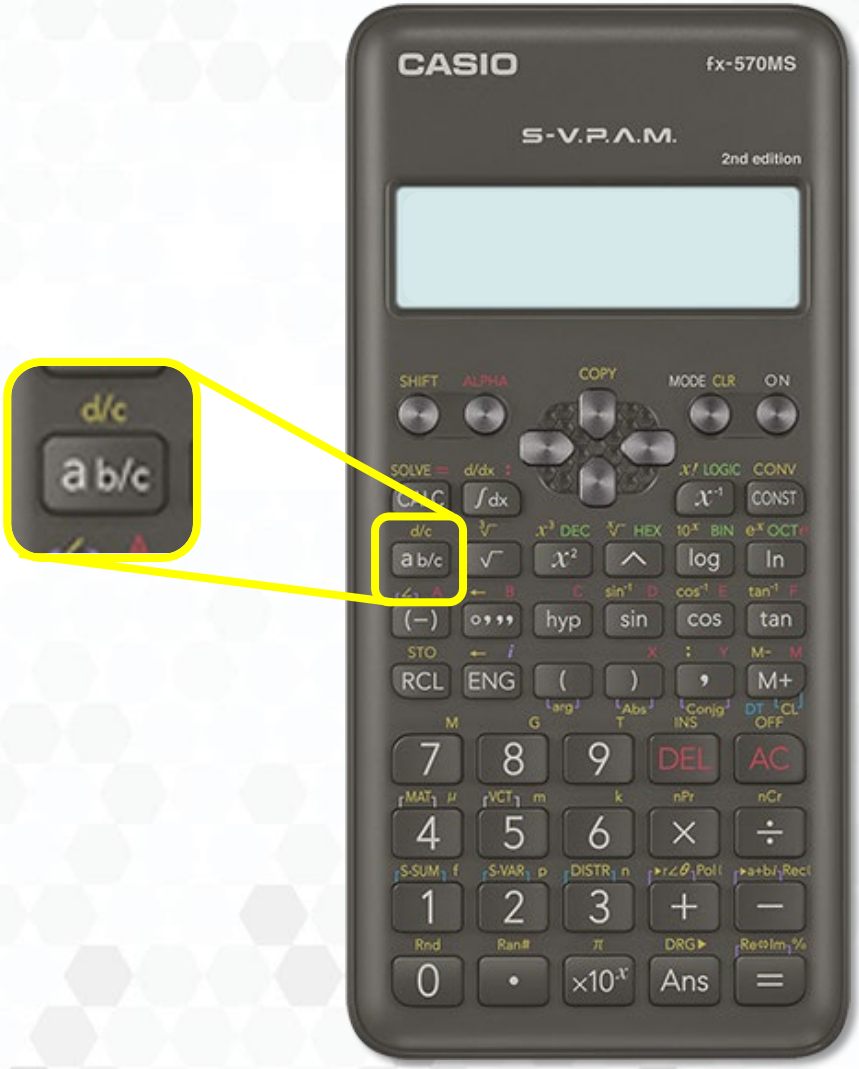
2) Calculate $8 \times (-2) \div (-5)$

Press [8] [×] [(] [−] [2] [)]

[÷] [(] [−] [5] [)] [=]



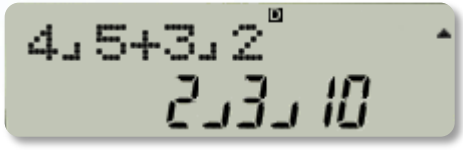
FRACTION FUNCTIONS



SIMPLIFYING FRACTION

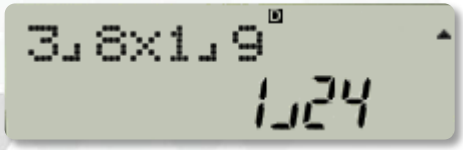
1) Calculate $\frac{4}{5}+\frac{3}{2}$

Press [4] [ab/c] [5] [+]
[3] [ab/c] [2] [=]



2) Calculate $\frac{3}{8}\times\frac{1}{9}$

Press [3] [ab/c] [8] [×]
[1] [ab/c] [9] [=]

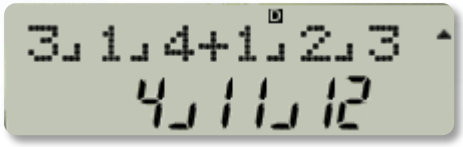


MIXED FRACTION

1) Calculate $3\frac{1}{4} + 1\frac{2}{3}$

Press [3] [ab/c] [1] [ab/c] [4] [+]

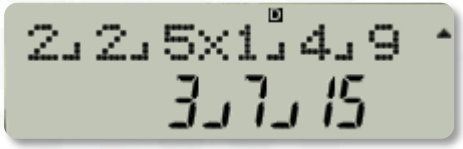
[1] [ab/c] [2] [ab/c] [3] [=]



2) Calculate $2\frac{2}{5} \times 1\frac{4}{9}$

Press [2] [ab/c] [2] [ab/c] [5] [×]

[1] [ab/c] [4] [ab/c] [9] [=]



IF fx-570EX Math ERROR, go to
MODE x6 >> Disp (1) >> ▶ >> ab/c (1)

CHANGING DECIMAL TO FRACTION

Example: $\frac{23}{10}$

Press [2] [3] [ab/c]

[1] [0] [=]

❑ Changing of mixed fraction to decimal number

Press [ab/c]

❑ Changing of mixed fraction to improper fraction

Press [SHIFT] [ab/c]

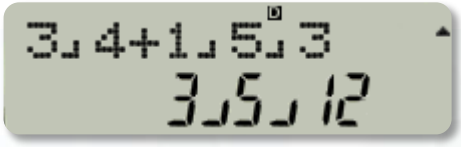
FRACTION FRACTION

Calculate $\dfrac{\frac{3}{4}+1\frac{5}{3}}{4-\frac{2}{3}}$

✓ Firstly, simplify the numerator.

Press [3] [ab/c] [4] [+]

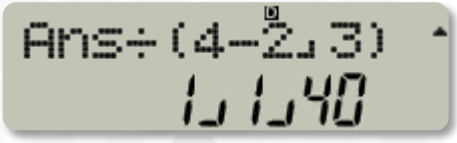
[1] [ab/c] [5] [ab/c] [3] [=]



✓ Then, simplify the denominator to get the final answer.

Press [Ans] [÷] [(] [4] [−]

[2] [ab/c] [3] [)] [=]



LET'S PRACTICE (1)

1) Calculate $\dfrac{\frac{5}{4} \times \frac{2}{7}}{6}$. Give your answer in fraction form.

Answer: $\dfrac{5}{84}$

2) Calculate $\left(\dfrac{3 - 6.5}{4}\right) + \left(4\dfrac{3}{5} - \dfrac{5}{7}\right)$.

Give your answer in mixed fraction.

Answer: $3\dfrac{3}{280}$

LET'S PRACTICE (2)

1) Calculate $\frac{3}{2} + \frac{\frac{30}{4} - 2.5}{16}$. Give your answer in improper fraction.

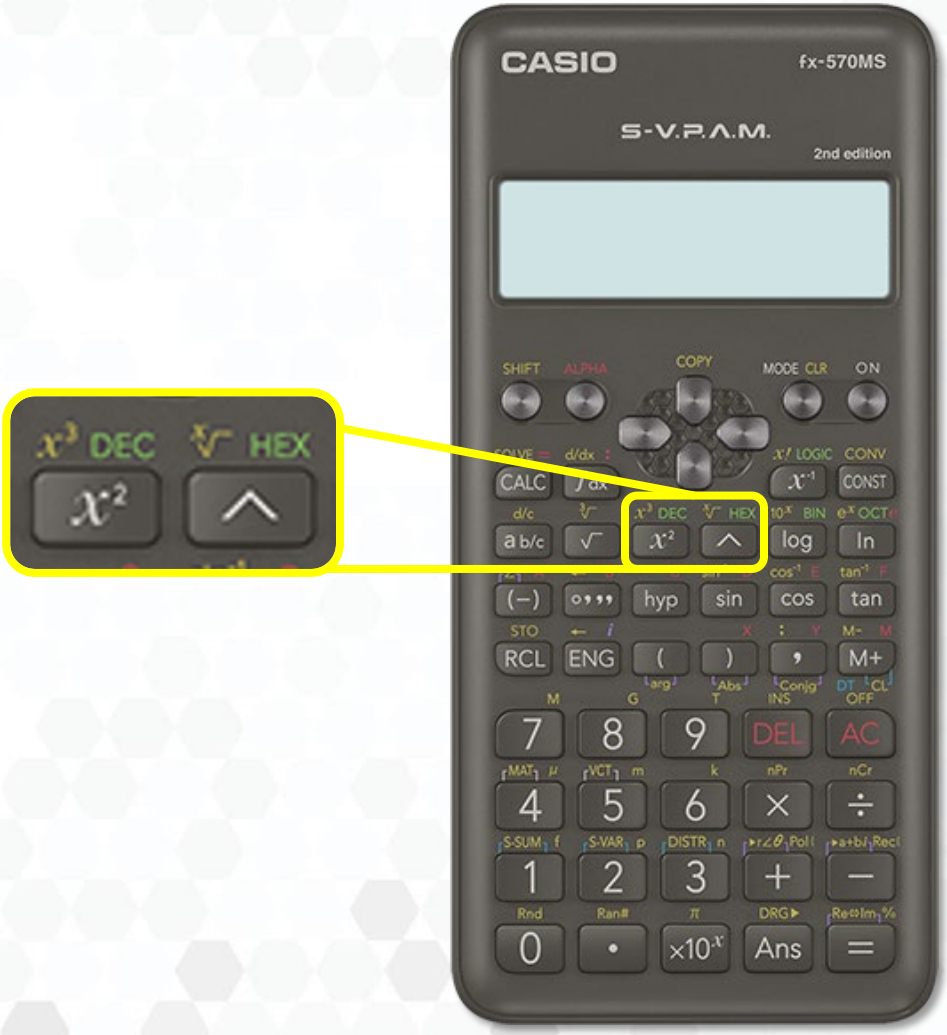
Answer: $\frac{29}{16}$

2) Calculate $6.5 + \left(\frac{3 - \frac{2}{3}}{4}\right) \times \left(5 - \frac{5}{2}\right)$.

Give your answer in mixed fraction.

Answer: $7\frac{23}{24}$

POWER FUNCTIONS



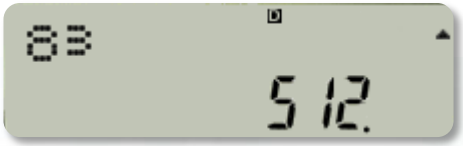
POWER

1) Calculate 6^2

Press [6] [x^2] [=]

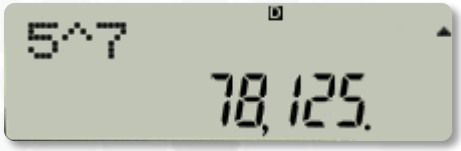
2) Calculate 8^3

Press [8] [SHIFT] [x^2] [=]



3) Calculate 5^7

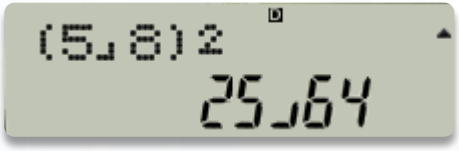
Press [5] [^] [7] [=]



FRACTION NUMBER & POWER

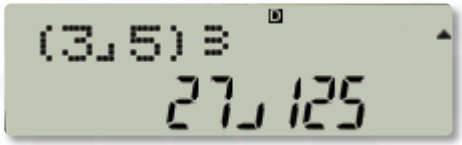
1) Calculate $\left(\frac{5}{8}\right)^2$

Press (5 ab/c 8) x^2 =



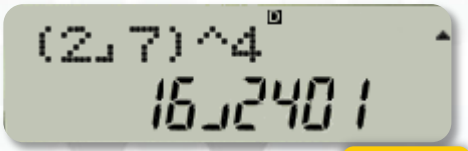
2) Calculate $\left(\frac{3}{5}\right)^3$

Press (3 ab/c 5) SHIFT x^2 =



3) Calculate $\left(\frac{2}{7}\right)^4$

Press (2 ab/c 7) ^ 4 =



NEGATIVE NUMBER & POWER

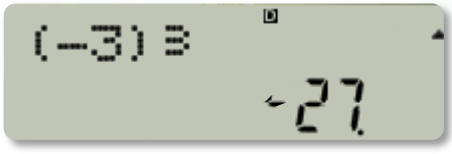
1) Calculate -4^2

Press [(] [−] [4] [)] [x^2] [=]

2) Calculate -6^3

Press [(] [−] [6] [)]

[SHIFT] [x^2] [=]



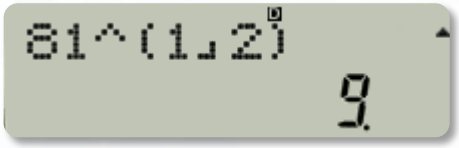
3) Calculate -2^8

Press [(] [−] [2] [)] [^] [8] [=]

FRACTION POWER

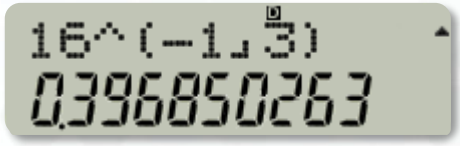
1) Calculate $81^{\frac{1}{2}}$

Press [8] [1] [^] [(] [1] [ab/c] [2] [)] [=]



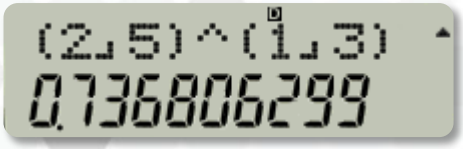
2) Calculate $16^{-\frac{1}{3}}$

Press [1] [2] [^] [(] [−] [1] [ab/c] [3] [)] [=]



3) Calculate $\left(\frac{2}{5}\right)^{\frac{1}{3}}$

Press [(] [2] [ab/c] [5] [)] [^]
[(] [1] [ab/c] [3] [)] [=]



LET'S PRACTICE (3)

1) Calculate $(2 \times 3)^{-3}$. Give your answer in fraction form.

Answer: $\frac{1}{36}$

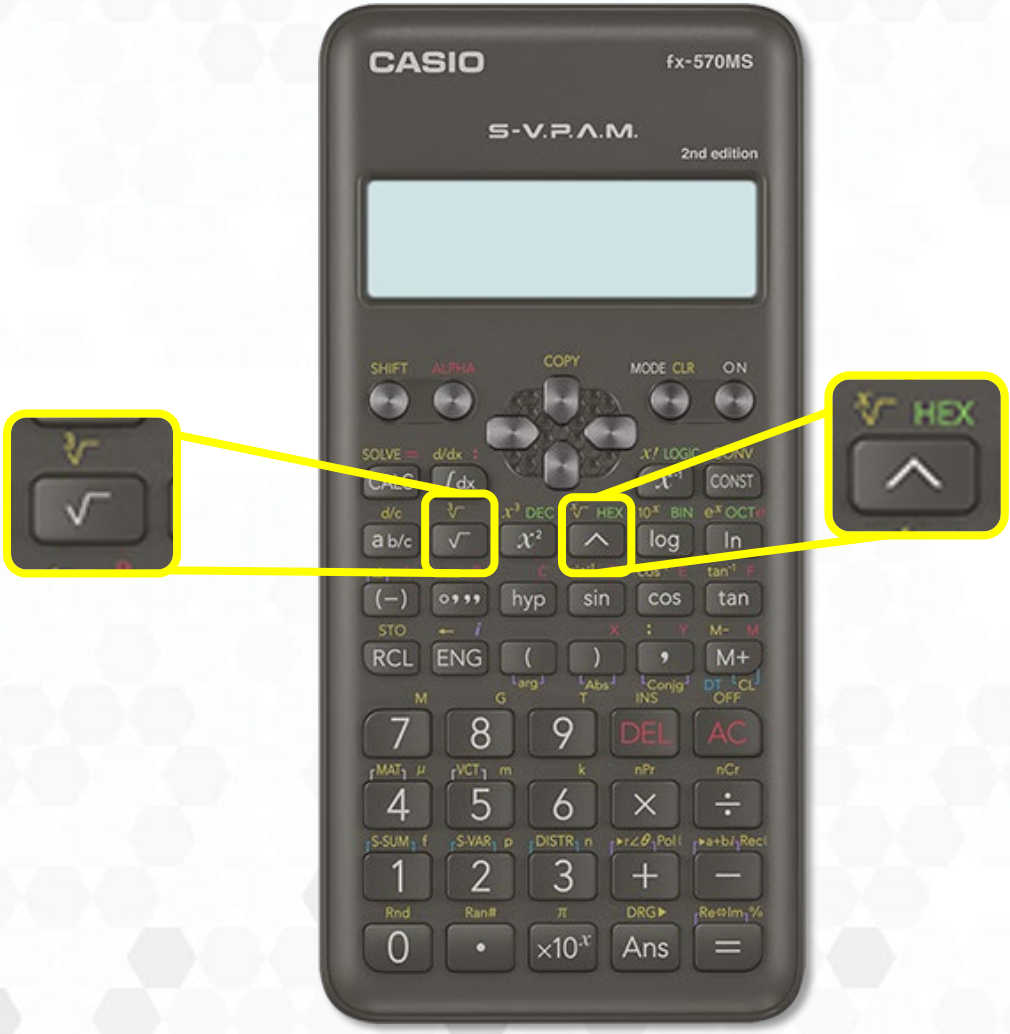
2) Calculate $\frac{2^3 \times 4^{-2}}{8}$.

Answer: 0.0625

3) Calculate $\frac{\left(3 + \frac{2}{5}\right)^3}{4^{-2}}$

Answer: 628.864

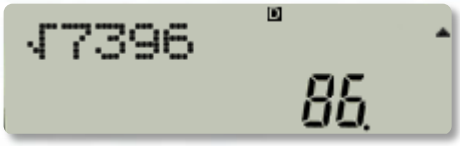
ROOT FUNCTIONS



ROOT

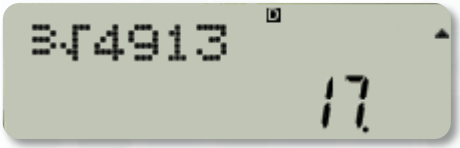
1) Calculate $\sqrt{7396}$

Press [√] [7] [3] [9] [6] [=]



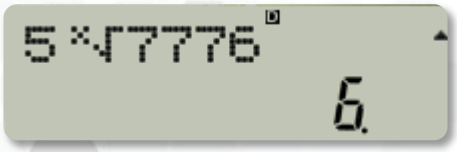
2) Calculate $\sqrt[3]{4913}$

Press [SHIFT] [√] [4] [9] [1] [3] [=]



3) Calculate $\sqrt[5]{7776}$

Press [5] [SHIFT] [^] [7] [7] [7] [6] [=]



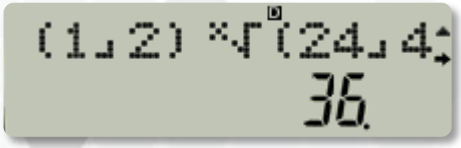
ROOT & FRACTION

1) Calculate $\sqrt[4]{\frac{3888}{3}}$

Press [4] [SHIFT] [^] [(] [3] [8] [8] [8]
[ab/c] [3] [)] [=]

2) Calculate $\sqrt[\frac{1}{2}]{\frac{24}{4}}$

Press [(] [1] [ab/c] [2] [)] [SHIFT] [^]
[(] [2] [4] [ab/c] [4] [)] [=]

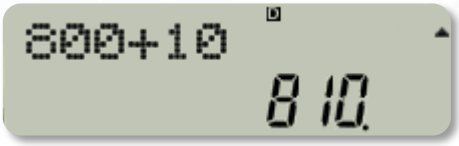


ROOT & OPERATIONS

Calculate $\sqrt[4]{\frac{800 + 10}{2 \times 5}}$

✓ Firstly, simplify the numerator,

Press [8] [0] [0] [+] [1] [0] [=]

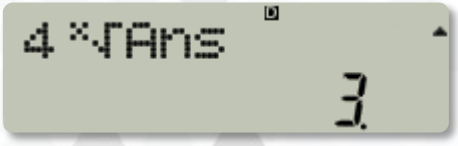


✓ Then, simplify the denominator,

Press [Ans] [÷] [(] [2] [×] [5] [)] [=]

✓ Lastly, simplify the root to get the final answer.

Press [4] [SHIFT] [^] [Ans] [=]



LET'S PRACTICE (4)

1) Calculate $\sqrt[3]{140 \times 5 + 29}$ **Answer:** 9

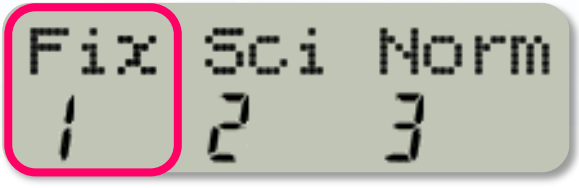
2) Calculate $\dfrac{\sqrt[3]{2^8 \times 3^5 \times 6}}{4}$ **Answer:** 18

3) Calculate $\sqrt[3]{\dfrac{\left(4 + \frac{2}{5}\right)^3}{10648}}$ **Answer:** $\frac{1}{5}$

FIXED DECIMAL MODE (FIX)

Displays numbers rounded to a specific number of decimal places.

Press [MODE] [MODE] [MODE] [MODE] [MODE]



Press [1]

Example:

If you set FIX ~ 3, the calculator will show numbers rounded to 3 decimal places.

If you set FIX ~ 5, the calculator will show numbers rounded to 5 decimal places.

FIXED DECIMAL PLACES (FIX) ~ 3 d.p

Calculate $100 \div 7$. Give your answer in three decimal places.

✓ To show results rounded to **3 decimal places,**

i) Press [MODE] (5 times)

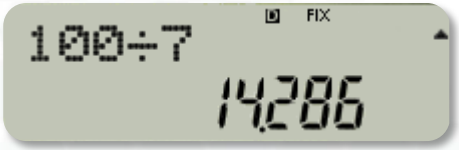
ii) Press [1] (for Fix mode)

iii) Enter [3] (for 3 decimal places)

The display will now show results rounded to three decimal places automatically.

✓ Now, perform the calculation:

Press [1] [0] [0] [÷] [7] [=]



d.p = Decimal Places

FIXED DECIMAL PLACES (FIX) ~ 4 d.p

Calculate 1.587 × 2.445. Give your answer in four decimal places.

✓ To show results rounded to **4 decimal places,**

i) Press [MODE] (5 times)

ii) Press [1] (for Fix mode)

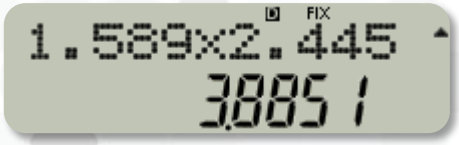
iii) Enter [4] (for 4 decimal places)

The display will now show results rounded to four decimal places automatically.

✓ Now, perform the calculation:

Press [1] [•] [5] [8] [9] [×]

[2] [•] [4] [4] [5] [=]

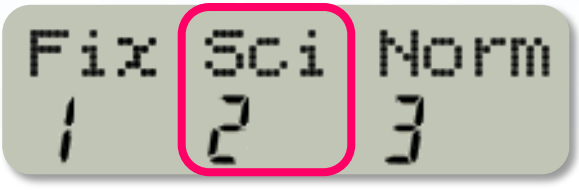


d.p = Decimal Places

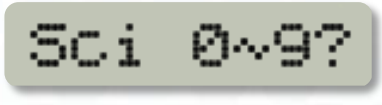
SCIENTIFIC NOTATION MODE (SCI)

Displays numbers in scientific notation (exponential form).

Press MODE MODE MODE MODE MODE



Press 2



Example:

If you set SCI ~ 2, the calculator will display results with 2 significant figures in scientific notation.

If you set SCI ~ 4, the calculator will display results with 4 significant figures in scientific notation.

SCIENTIFIC NOTATION (SCI) ~ 3 s.f

Calculate $2.2 \times 10^5 + 3.4 \times 10^4$. Give your answer in three significant figures.

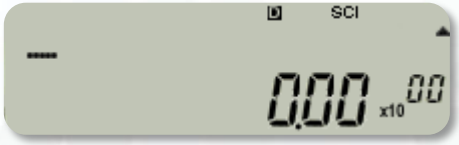
✓ To show results in **3 significant figure,**

i) Press [MODE] (5 times)

ii) Press [2] (for Sci mode)

iii) Enter [3] (for 3 significant figures)

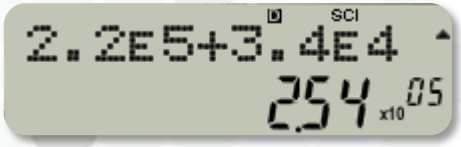
The display will now show results in three significant figures automatically.



✓ Now, perform the calculation:

Press [2] [•] [2] [×10^x] [5] [+]
[3] [•] [4] [×10^x] [4] [=]

or [EXP]



EXP = Exponential
s.f = Significant Figure

SCIENTIFIC NOTATION (SCI) ~ 5 s.f

Calculate $\frac{3.5 \times 10^5}{5.4 \times 10^3}$. Give your answer in five significant figures.

✓ To show results in **5 significant figure,**

i) Press [MODE] (5 times)

ii) Press [2] (for Sci mode)

iii) Enter [5] (for 5 significant figures)

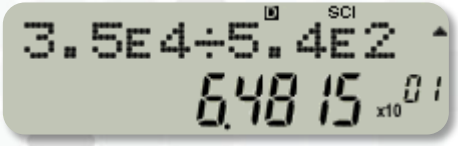
The display will now show results in five significant figures automatically.

✓ Now, perform the calculation:

Press [3] [•] [5] [×10^x] [4] [÷]

[5] [•] [4] [×10^x] [2] [=]

or [EXP]



EXP = Exponential
s.f = Significant Figure

LET'S PRACTICE (5)

1) Calculate $\dfrac{644^{\frac{3}{4}} \times \dfrac{1}{16}}{256}$.

Give your answer in

a) four decimal places.
b) four significant figures.

Answer:

a) 0.0312
b) 3.121×10^{-2}

2) Calculate $\dfrac{81^{\frac{3}{4}} \times 27^{\frac{1}{3}}}{243^{\frac{2}{5}} \times 4^{3}}$.

Give your answer in

a) three decimal places.
b) five significant figures.

Answer:

a) 0.141
b) 1.4063×10^{-1}

3) Calculate $\dfrac{33.2 \times \sqrt{35} - 55.58}{3.579 \times 10^{3}}$.

Give your answer in

a) four decimal places.
b) two significant figures.

Answer:

a) 0.0394
b) 3.9×10^{-2}

LET'S PRACTICE (6)

1) Calculate $\dfrac{2.456 \times 10^4 + 6.0034 \times 10^5}{6215 \times \sqrt{81}}$.

Give your answer in

a) three decimal places.
b) four significant figures.

Answer:

a) 11.172
b) 1.117×10^{-1}

2) Calculate $3.5 + \left(\dfrac{\frac{60}{2} - 15.2}{50}\right) \times (63 - 52)$.

Give your answer in

a) two decimal places.
b) two significant figures.

Answer:

a) 6.76
b) 6.8×10^0

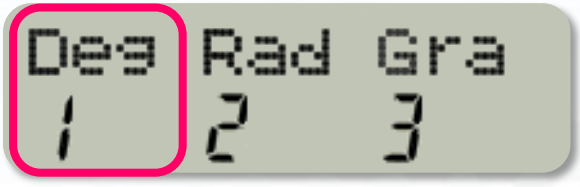
TRIGONOMETRY FUNCTIONS

DEGREE MODE (DEG)

- ✓ Uses degrees (°) as the unit for angles.
- ✓ *By default, the display is in Degree mode.*

- ✓ To set in degree mode,

Press [MODE] [MODE] [MODE] [MODE]



Then, press [1]

RADIAN MODE (RAD)

- ✓ Uses radians as the unit for angles.
- ✓ To set in radian mode,

Press [MODE] [MODE] [MODE] [MODE]

Then, press [2] (for Radian mode)

The display will now show in radian mode.

CONVERSION DEGREE TO RADIAN

Convert the following angle to radian correct to 2 decimal places.

$$120° = ?\ rad$$

✓ Make sure the calculator is in Degree mode.

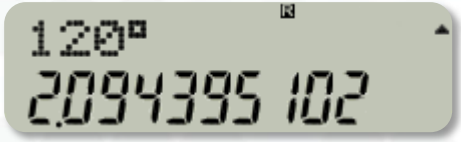
✓ Now, perform the calculation:

Press [1] [2] [0] [SHIFT] [DRG▶] [Ans] [1]

✓ To set in radian mode.

i) Press [MODE] (4 times)

ii) Enter [2] [=]



✓ To convert the angle correct to 2 decimal places.

i) Press [MODE] (5 times)

ii) Press [1]

ii) Enter [2]

CONVERSION RADIAN TO DEGREE

Convert the following angle to degree correct to 2 decimal places.

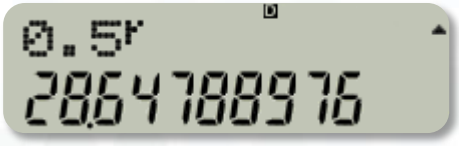
$$0.5\,rad = ?\ \ degree$$

✓ Make sure the calculator is in Degree mode.

✓ Now, perform the calculation:

DRG▶

Press [0] [•] [5] [SHIFT] [Ans] [2] [=]

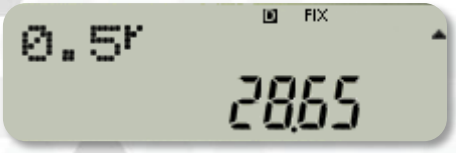


✓ To convert the angle correct to 2 decimal places.

i) Press [MODE] (5 times)

ii) Press [1]

ii) Enter [2]



LET'S PRACTICE (7)

1) Convert the following angle to radian correct to 3 decimal places.

   a) $150°$
   b) $225°$
   c) $330.5°$

Answer:

a) $2.618\ rad$
b) $3.927\ rad$
c) $5.768\ rad$

2) Convert the following angle to degree correct to 2 decimal places.

   a) $1.4\ rad$
   b) $\frac{\pi}{4}\ rad$
   c) $\frac{5\pi}{3}\ rad$

Answer:

a) $80.21°$
b) $45.00°$
c) $300.00°$

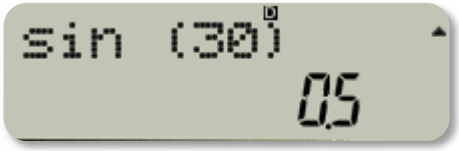
θ DEGREE (TRIGONOMETRY)

Find $sin(30°)$.

✓ Make sure the calculator is in Degree mode.

✓ Now, perform the calculation:

Press [sin] [(] [3] [0] [)] [=]



θ RADIAN (TRIGONOMETRY)

Find $sin\left(\frac{\pi}{3}\right)$.

✓ Set calculator in radian mode.

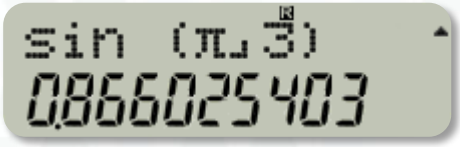
i) Press [MODE] (4 times)

ii) Enter [2]

✓ Now, perform the calculation:

Press [sin] [(] [SHIFT] [π / $\times 10^x$] [ab/c] [3] [)] [=]

or [π / EXP]



SOLVE FOR TRIGONOMETRY

Find $\sin x = \frac{1}{2}$.

To solve for x, use : $x = sin^{-1}\left(\frac{1}{2}\right)$

✓ Set the Calculator to Degree Mode.

i) Press [MODE] (4 times)

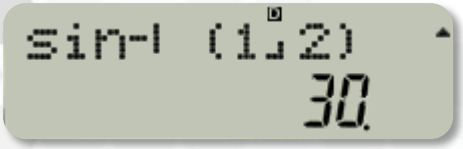
ii) Press [1] (for Deg mode)

✓ Use the Inverse Sine Function ($\sin^{-1}$).

sin^{-1}

i) Press [SHIFT] [sin] [(]

ii) Enter [1] [ab/c] [2] [)] [=]



LET'S PRACTICE (8)

1) Find each of the following using a calculator. Give your answer correct to 4 decimal places.

a) $\cos(45°)$
b) $\sin(255.5°)$
c) $\tan(70°)$

Answer:

a) 0.7071
b) -0.9681
c) 2.7475

2) Find each of the following using a calculator. Give your answer correct to 3 decimal places.

a) $\cos\left(\frac{3\pi}{5}\right)$

b) $\tan\left(\frac{\pi}{3}\right)$

c) $\sin\left(\frac{2\pi}{7}\right)$

Answer:

a) -0.309
b) 7.732
c) 0.782

LET'S PRACTICE (9)

Solve each of the following using a calculator.

a) $\cos x = \frac{1}{2}$

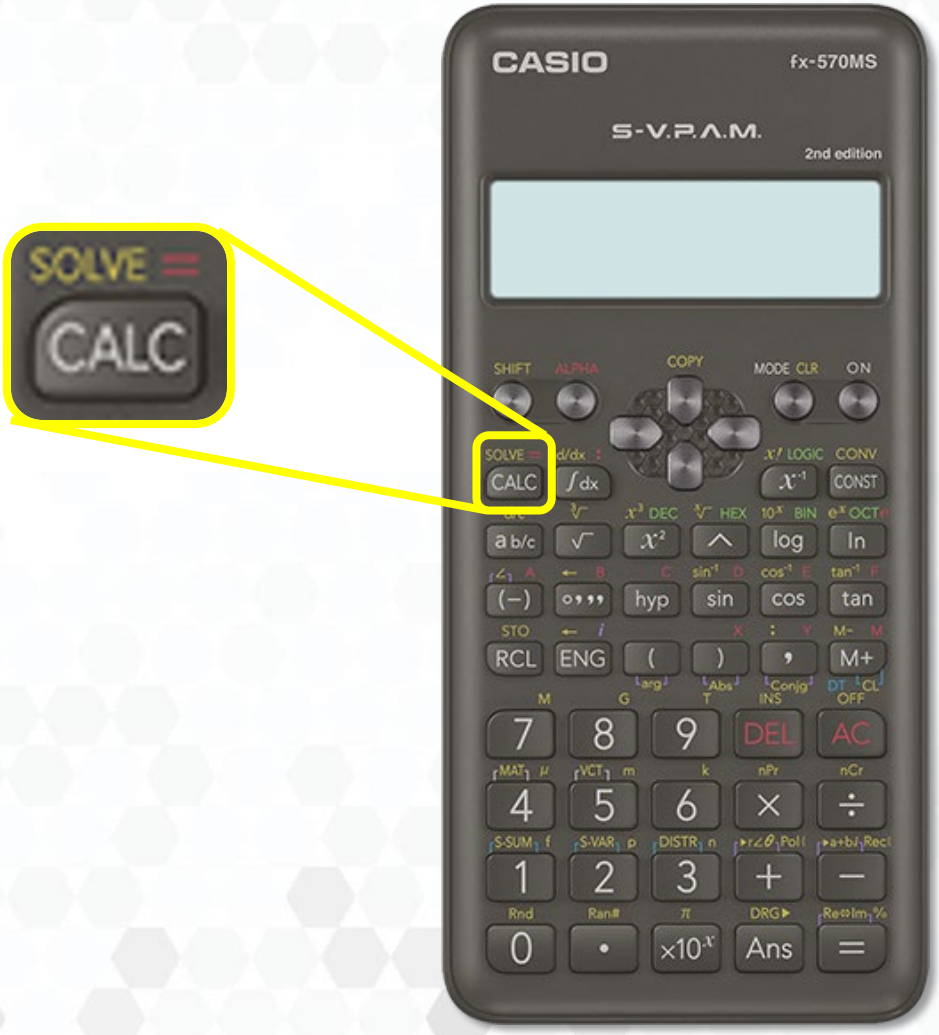
b) $\sin \theta = \frac{\sqrt{3}}{2}$

c) $\tan \theta = 1$

Answer:

a) $60°$
b) $60°$
c) $45°$

SOLVE FUNCTIONS



USING SOLVE

Given $y = 2x^2 + x - 3$. Complete table below.

x	3	-5	$\frac{3}{5}$
y			

✓ Enter the equation.

Press [2] [ALPHA] [)] [x^2] [+] [ALPHA] [)] [−] [3]

(X) (X)

✓ Find the value when $x = 3$.

Press [CALC] (X?) Enter [3] [=] 18

SOLVE =

✓ Find the value when $x = -5$.

Press [CALC] (X?) Enter [−] [5] [=] 42

SOLVE =

✓ Find the value when $x = \frac{3}{5}$

Press [CALC] (X?) Enter [3] [ab/c] [5] [=] $-\frac{42}{25}$

SOLVE =

LET'S PRACTICE (10)

1) Given $y = 4x^2 - 2x + 5$. Complete table below.

x	2	-6	$\frac{2}{3}$
y			

Answer: 17 161 $\frac{49}{9}$

2) Given $y = 2x^3 + 2x^2 - x + 3$. Complete table below.

x	2	-3	$\frac{1}{3}$
y			

Answer: 25 -30 $\frac{94}{27}$

SOLVE FOR LINEAR EQUATION

Solve the equation: $2x - 7 = 5$

✓ Enter the equation.

Press [2] [ALPHA] [)] [−] [7] [ALPHA]

X

SOLVE =

[CALC] [5]

✓ To find the value of x.

SOLVE =

Press [SHIFT] [CALC] (X?)

SOLVE =

[SHIFT] [CALC] (X=) 6

LET'S PRACTICE (11)

Solve the following equations.

a) $5x - 3 = \frac{1}{2}$

b) $\frac{3}{4} - 6x = 12$

c) $7 - 6x = \frac{2x}{3}$

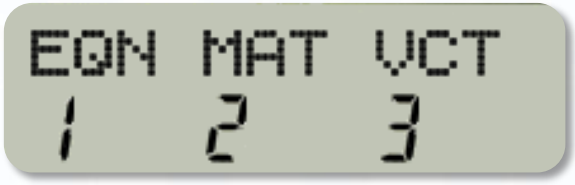
Answer:

a) 0.7
b) -1.875
c) 1.05

EQUATION MODE (EQN)

Steps to access equation mode (EQN).

Press [MODE] [MODE] [MODE]



Choose the type of equation:

Select [1] for Simultaneous Equations (Two or Three Variables)

Select [2] for polynomial equations (Quadratic or Cubic)

Select [3] for Vector Solution

SOLVE FOR QUADRATIC EQUATION

Solve the equation: $2x^2 + x - 3 = 0$

Please make sure the equation = 0

✓ Setup for Equation Mode (EQN).

i) Press [MODE] (3 times)

ii) Select [1] [▶] (Degree?) [2]

✓ Enter the coefficients: $a = 2, b = 1, c = -3$.

(a?) [2] [=] (b?) [1] [=] (c?) [−] [1] [=]

$x1 = 1$ [=] $x2 = -1.5$

LET'S PRACTICE (12)

Solve the following equations.

a) $2x^2 + 7x = 4$

b) $4x^2 + 3x - 4 = 0$

Answer:

a) $x1 = 0.5, \quad x2 = -4$
b) $x1 = 0.693, \quad x2 = -1.443$

SOLVE FOR SIMULTANEOUS EQUATIONS

Two Unknowns

Find the value of x and y for the equation below.

$$3x + 5y = 31$$
$$7x - 3y = 21$$

✓ Setup for Simultaneous Equation Mode (EQN).

i) Press [MODE] (3 times)

ii) Select [1] (Unknowns?) [2]

✓ Enter the coefficients:

$a1 = 3, b1 = 5 \ , c1 = 31$

$a2 = 7, b2 = -3, c2 = 21$

(a1?) [3] [=] (b1?) [5] [=] (c1?) [3] [1] [=]

(a2?) [7] [=] (b2?) [−] [3] [=] (c2?) [2] [1] [=]

$x = 4.5$ [=] $y = 3.5$

LET'S PRACTICE (13)

Find the value of x and y for the following equations.

a) $2x - y = 3$
$3x + 2y = 8$

b) $x + 4y = 2$
$x + \frac{3}{2}y = 1$

Answer:

a) $x = 2, \quad y = 1$
b) $x = 0.4, \quad y = 0.4$

SOLVE FOR SIMULTANEOUS EQUATIONS

Three Unknowns

Find the value of x, y and z for the equation bellow.

$$2x + 3y + 2z = 3$$
$$3x + 2y + 5z = 1$$
$$2x + 3y + 9z = 5$$

✓ Setup for Simultaneous Equation Mode (EQN).

i) Press [MODE] (3 times)

ii) Select [1] (Unknowns?) [3]

✓ Enter the coefficients:

(a1?) [2] [=] (b1?) [3] [=] (c1?) [2] [=] (d1?) [3] [=]

(a2?) [3] [=] (b2?) [2] [=] (c1?) [5] [=] (d2?) [1] [=]

(a3?) [2] [=] (b3?) [3] [=] (c3?) [9] [=] (d3?) [5] [=]

Use the [ab/c] button to display fractions (optional).

$x = -\frac{43}{35}$ [=] $y = \frac{57}{35}$ [=] $z = \frac{2}{7}$

LET'S PRACTICE (14)

Find the value of x and y for the following equations.

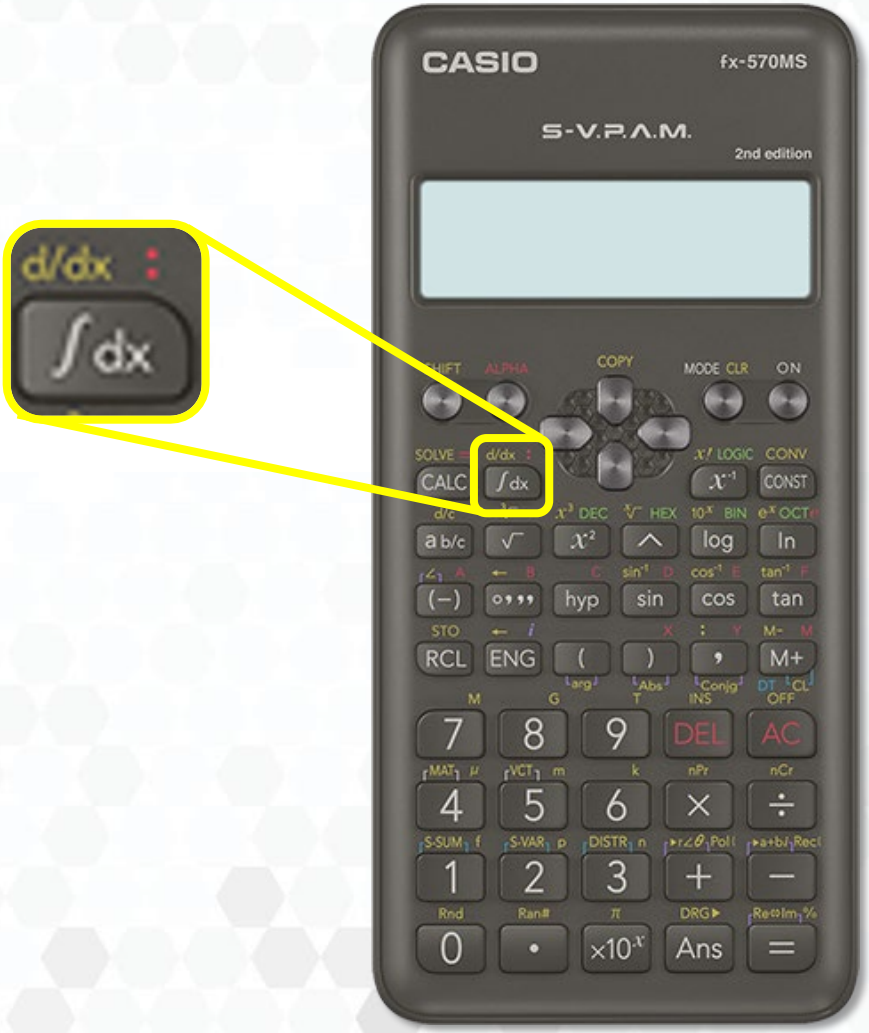
a) $x - 2y + z = 5$
$3x + 7y - 2z = 1$
$x + 3y = -5$

b) $2x + 4y + 4z = 16$
$2x - y + 3z = 9$
$3x + 4y - z = 8$

Answer:

a) $x = 4, \quad y = -3, \quad z = -5$
b) $x = 2, \quad y = 1, \quad z = 2$

DERIVATIVE AND INTEGRATION



DERIVATIVES

Given $f(x) = 4x^2 + 3x - 2$, find $f'(2)$.

✓ Press SHIFT $\int dx$ (d/dx) d/dx(

✓ Enter the expression:

4 ALPHA) (x^2) + 3 ALPHA) (X) (X)

− 2 , 2) = 19

LET'S PRACTICE (15)

Solve the following questions.

a) Given $f(x) = 2\sqrt{3x+4}$, find $f'(0)$.

b) Given $f(x) = \dfrac{x}{x+2}$, find $f'(2)$.

Answer:

a) 1.5
b) 0.125

INTEGRATION

Upper limit

$$\int_{1}^{5} (2x^2 + 3x + 8)\ dx$$

Lower limit

✓ Press $\int dx$ ∫ (

✓ Enter the expression:

X X

2	ALPHA	)	x^2	+	3	ALPHA	)

+	8	,	1	,	5	)	=	150.666

Lower limit Upper limit

LET'S PRACTICE (16)

Solve the following equations.

a) $\int_{2}^{3} (3x^2 - 5x + 2)\ dx$

b) $\int_{1.2}^{2.5} (5x + 7)\ dx$

Answer:

a) 8.5
b) 21.125

Thank You

About the Book

SMART CALCULATOR (LINEAR DISPLAY) is a practical guide aimed at helping students, especially those studying mathematics, make the most of modern scientific calculators with linear displays, such as the Casio fx-570 series. This book provides clear, step-by-step instructions, useful tips, and relevant examples to support effective learning and problem-solving. While primarily designed for students, it is also a helpful resource for educators, parents, and anyone looking to improve their calculator skills and mathematical understanding.

e ISBN 978-629-95953-1-1