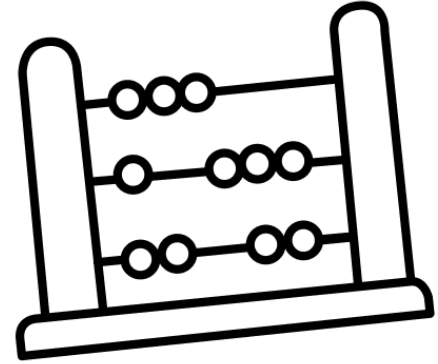


Isticmaalka fx-CG50 ee tirooyinka iyo aljabrada (algebra)



Maths

Unit Hawlaha xisaabiyaha (calculator)

Natiijo

Waxaan isticmaali karaa fx-CG50 si aan u sameeyo xisaabinta tirooyinka iyo xallinta isla'egyada (equations) tiro ahaan.

Erayada muhiimka ah

Isla'eg (equation) waxaa loo isticmaalaa in lagu muujiyo 2 tibaaxood (expressions) oo isku qiimo (value) ah.

Isla'egyada (equations) ka dhiganaya xiriirro kala duwan oo u dhexeeya doorsoomayaasha (variables) isku mid ah waxaa loo yaqaan isla'egyada isku mar (simultaneous equations).

Isticmaalka fx-CG50 ee tirooyinka iyo aljabrada (algebra)



Xallinta isla'egyada (equations) garaaf ahaan



Xallinta isla'egyada (equations) tiro ahaan



Caasha

Xisaabiyayaashu (calculators) wax badan bay qaban karaan tiro ahaan.

fx-CG50 sidoo kale waxay xallin kartaa garaaf ahaan.

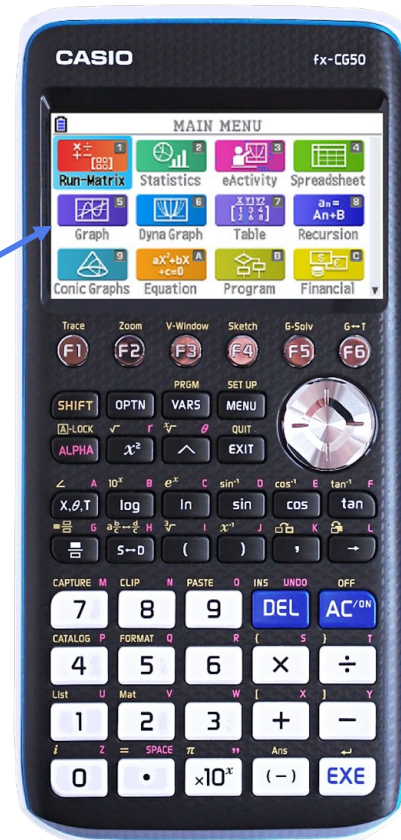


Saciid

Xallinta isla'egyada (equations) garaaf ahaan

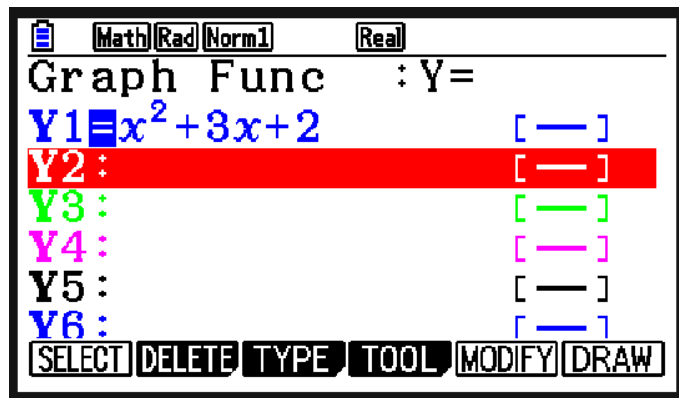
fx-CG50 waxay kuu ogolaaneysaa inaad sawirto garaafyada (graphs) ka dibna aad falanqeyso.

Laga bilaabo menu-ga (menu) guud, u gudub ikhtiyaarka 'Graph' oo riix 'EXE'.



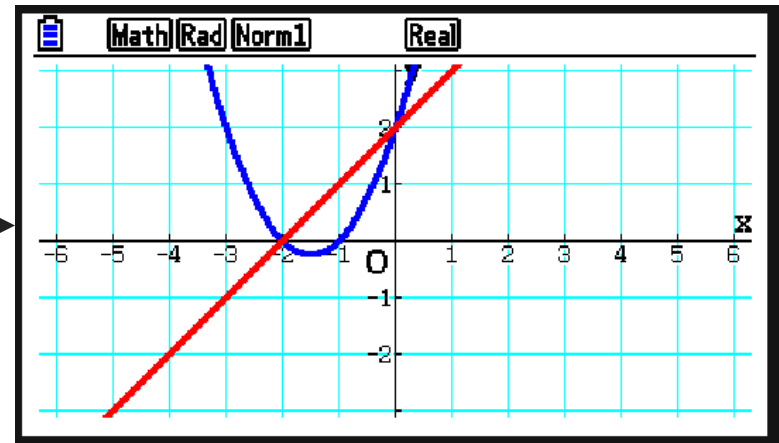
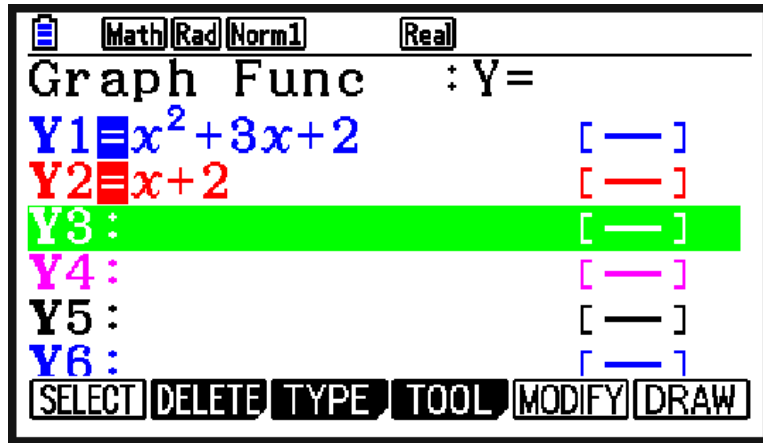
Xallinta isla'egyada (equations) garaaf ahaan

Waxaad ku geli kartaa isla'egta (equation) garaafka shaashaddan, adigoo isticmaaya badhanka si aad u gasho doorsoomaha x.



Xallinta isla'egyada (equations) garaaf ahaan

Markaad diyaar tahay, riix F6 si aad u sawirto garaafka. Haddii aad gashay isla'egyada (equations) garaafyo badan, xisaabiyuhu (calculator) wuxuu sawiri doonaa dhammaantood.



Run mise been?

Xisaabiyaha (calculator) wuxuu sawiri karaa hal garaaf (graph) kaliya markiiba.



Run



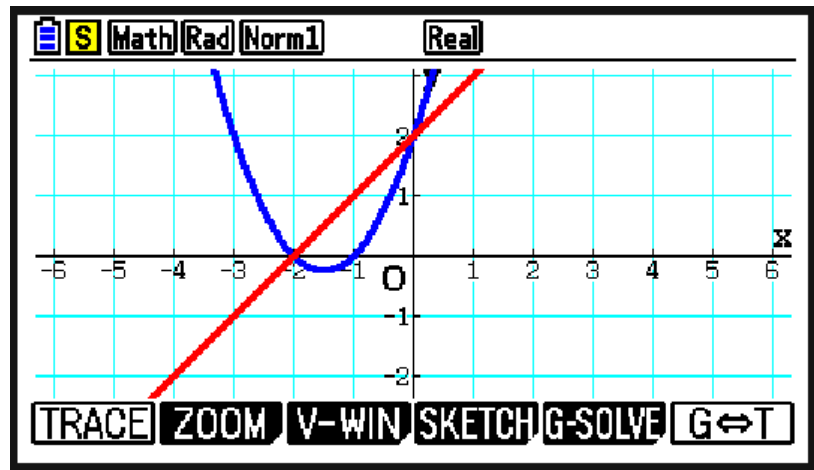
Been



Waxaa jira meelo bannaan oo ilaa 20 isla'eg (equation) oo garaafyo ah oo la gelin karo.

Xallinta isla'egyada (equations) garaaf ahaan

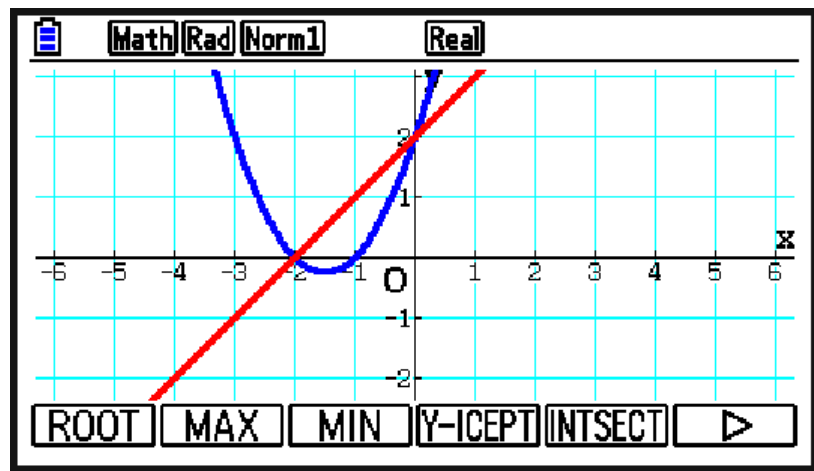
Markaad sawirto garaafyadaada (graphs), waxaad isticmaali kartaa menu-ga 'G-Solve' si aad u falanqeyso garaafyada.



Riixida 'SHIFT' oo ay raacdo F5 waxay kuu ogolaaneysaa inaad gasho 'G-Solve'.

Xallinta isla'egyada (equations) garaaf ahaan

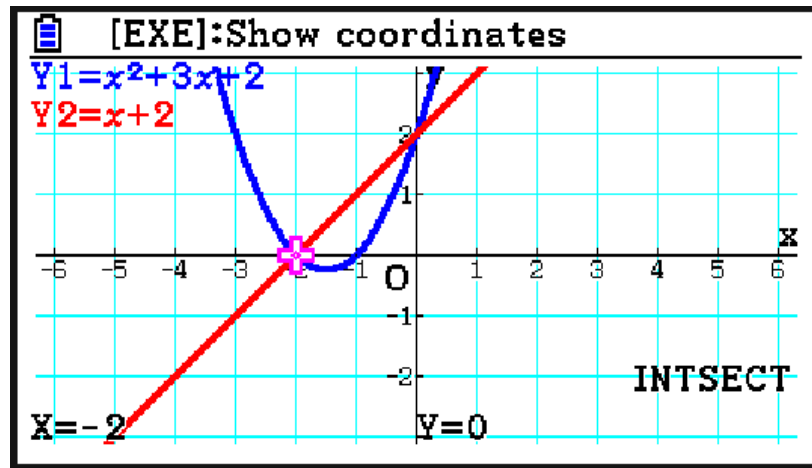
Waxaad ka heli kartaa xididdada (roots), dhibcaha ugu sarreeya/ugu hooseeya (maximum/minimum), y-intercept-ka, iyo dhibcaha isgoysyada (intersection) haddii aad haysato garaafyo badan.



Xallinta isla'egyada (equations) garaaf ahaan

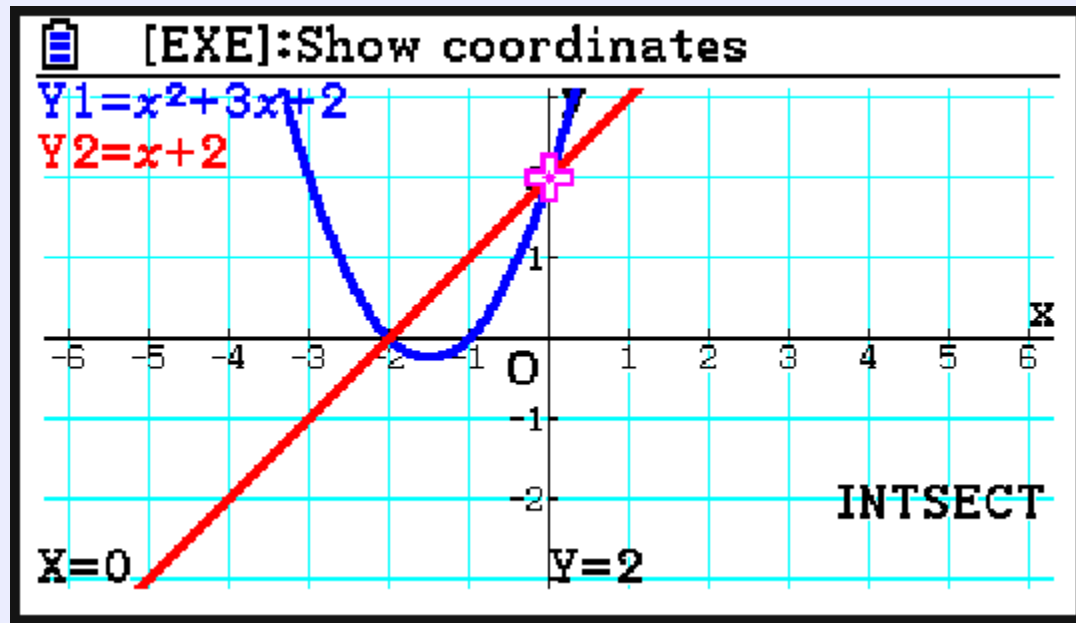
Dhibcaha koowaad ee isgoyska waa marka $x = -2$, $y = 0$

Fallaaraha (arrows) waxaa loo isticmaali karaa in lagu xusho dhibcaha xiga.



Xallinta isla'egyada (equations) garaaf ahaan

Waa maxay isku-duwayaasha (coordinates) dhibcaha labaad ee isgoyska?



$(0, 2)$

1) Isticmaal xisaabiyahaaga (calculator) si aad u xalliso labadan isla'eg oo isku mar ah (simultaneous equations).

a) $y = x - 3$
 $y = 3x + 6$

b) $6y - x = 14$
 $x + 3y = 13$

2) Labada isla'eg oo isku mar ah (simultaneous equations) kasta, qor waxa xisaabiyahaagu (calculator) yiraahdo markaad isku daydo inaad xalliso garaaf ahaan. Maxaad u maleyneysaa in xisaabiyuhu (calculator) bixiyo natii jadan?

a) $35x - 7y = 63$

$$y = 5x + 1$$

b) $3x + 4y = 7$

$$y = \frac{4}{3}x - 7$$

c) $25x - 5y + 5 = 0$

$$y = 5x + 1$$

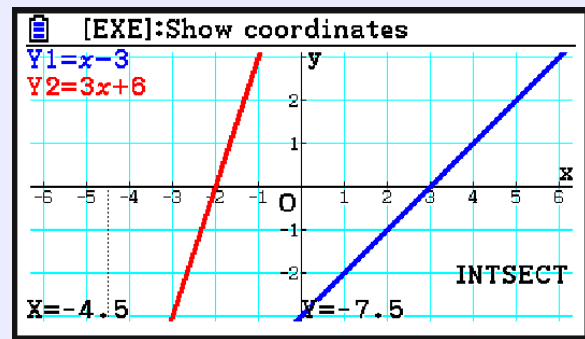
3) Isticmaal xisaabiyahaaga (calculator) si aad u qiyaasto xallinta labadan isla'eg oo isku mar ah (simultaneous equations) ilaa 3 d.p.

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

$$y = 1.7 - 0.8x$$

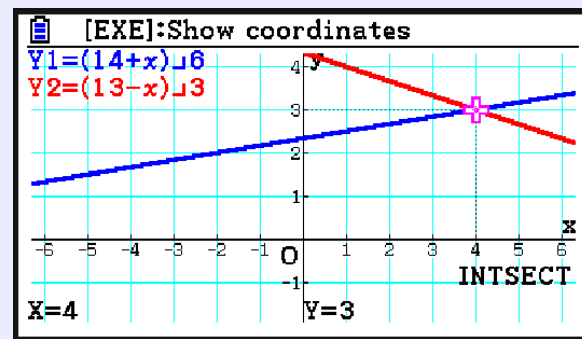
1) Isticmaal xisaabiyahaaga (calculator) si aad u xalliso labadan isla'eg oo isku mar ah (simultaneous equations).

a) $y = x - 3$
 $y = 3x + 6$



$x = -4.5, y = -7.5$

b) $6y - x = 14$
 $x + 3y = 13$



$x = 4, y = 3$

2) Labada isla'eg oo isku mar ah (simultaneous equations) kasta, qor waxa xisaabiyahaagu (calculator) yiraahdo markaad isku daydo inaad xalliso garaaf ahaan. Maxaad u maleyneysaa in xisaabiyuhu (calculator) bixiyo natiijadan?

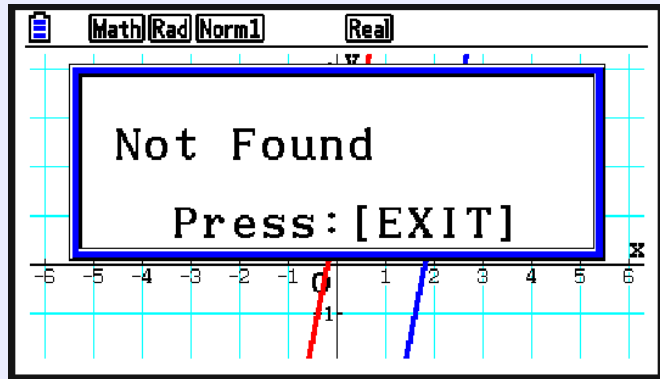
a) $35x - 7y = 63$

$$y = 5x + 1$$

E.g.

Xisaabiyaha (calculator) ma helin milan (solution) maadaama aysan jirin meel isgoys (point of intersection).

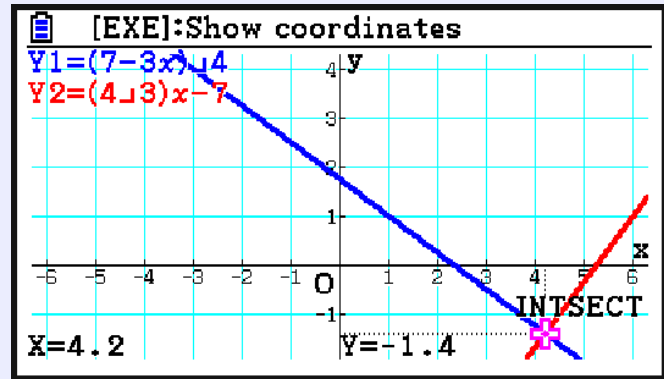
Khadadka (lines) waa isbarbar yaac (parallel) maadaama ay leeyihiin jiir (gradient) isku mid ah.



2) Isla'egyada (equations) isku xiran (simultaneous) ee kasta, qor waxa xisaabiyaha (calculator) kuu sheego markaad isku daydo inaad garaaf ahaan (graphically) ku xalliso. Maxaad u malaynaysaa in xisaabiyuhu (calculator) soo saaro natijadan?

b) $3x + 4y = 7$

$$y = \frac{4}{3}x - 7$$



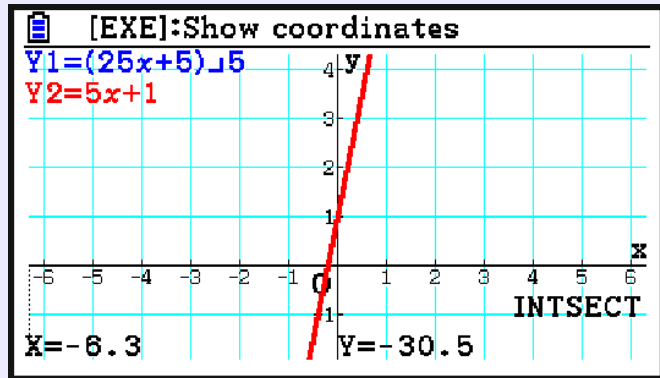
E.g.

Khadadka (lines) waxay leeyihiin hal isgoys (intersection) oo xisaabiyaha (calculator) awooday inuu helo. Wuxuu muujiyaa isku-duwayaasha (coordinates) ee barta isgoyska (point of intersection).

2) Isla'egyada (equations) isku xiran (simultaneous) ee kasta, qor waxa xisaabiyaha (calculator) kuu sheego markaad isku daydo inaad garaaf ahaan (graphically) ku xalliso. Maxaad u malaynaysaa in xisaabiyuhu (calculator) soo saaro natiijadan?

$$c) 25x - 5y + 5 = 0$$

$$y = 5x + 1$$



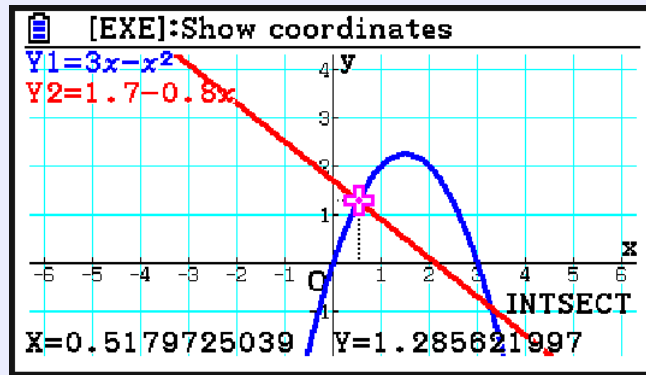
E.g.

Xisaabiyaha (calculator) wuxuu bixiyaa barta isgoyska (point of intersection). Markaad rogrogto waxaa soo baxaya inay jiraan dhowr isgoys (points of intersection). Sababta oo ah labada khad (lines) waa isku mid, sidaas darteed waxay leeyihiin milaan (solutions) aan xad lahayn (infinitely many).

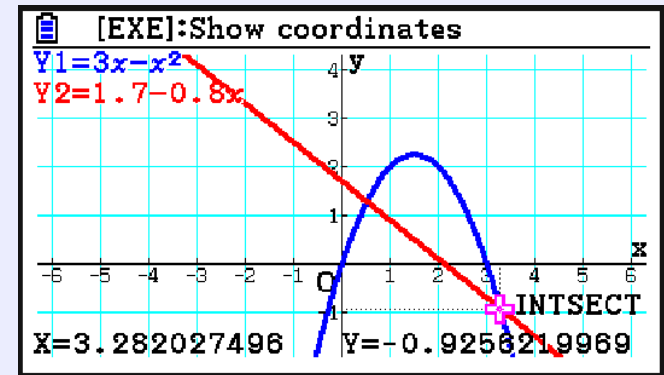
3) U isticmaal xisaabiyahaaga (calculator) si aad u qiyaasto milan (solutions) ee isla'egyadan (equations) isku xiran (simultaneous) ilaa 3 d.p.

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

$$y = 1.7 - 0.8x$$



$$x = 0.518, y = 1.286$$



$$x = 3.282, y = -0.926$$

Isticmaalka fx-CG50 ee tiro iyo algebra



Xallinta isla'egyada (equations) garaaf ahaan (graphically)



Xallinta isla'egyada (equations) tiro ahaan (numerically)



Caasha

Marka xisaabiyahan (calculator) kaliya
ma xalliyaa isla'egyada (equations)
garaaf ahaan (graphically)?

Maya! Waxa uu xitaa la tacaali
karaa qaaciidooyinka (formulas).



Saciid

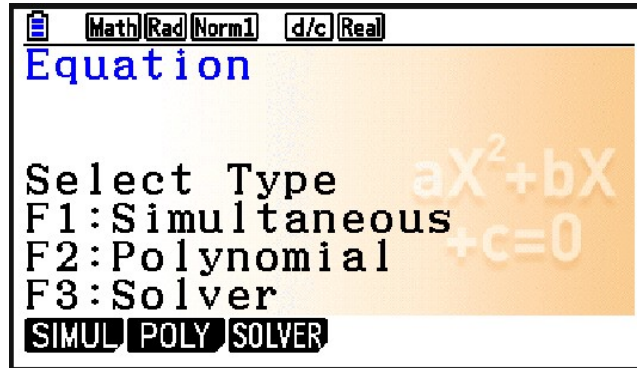
Xallinta isla'egyada (equations) tiro ahaan (numerically)

fx-CG50 waxa uu kuu ogolaanayaa inaad xalliso isla'egyada (equations) tiro ahaan (numerically) oo aad qiimeyso (evaluate) qaaciidooyinka (formulas).

Laga bilaabo menu-ga (main menu) guji ikhtiyaarka 'Equation' kadibna riix 'EXE'.



Xallinta isla'egyada (equations) tiro ahaan (numerically)



Markii 'Equation' la doorto, dooro 'Solver' adigoo riixaya F3.

Geli isla'egta (equation) ama qaacidada (formula), adigoo isticmaalaya badhanka 'ALPHA' si aad u doorato doorsoomayaasha (variables) kala duwan sida loo baahan yahay.

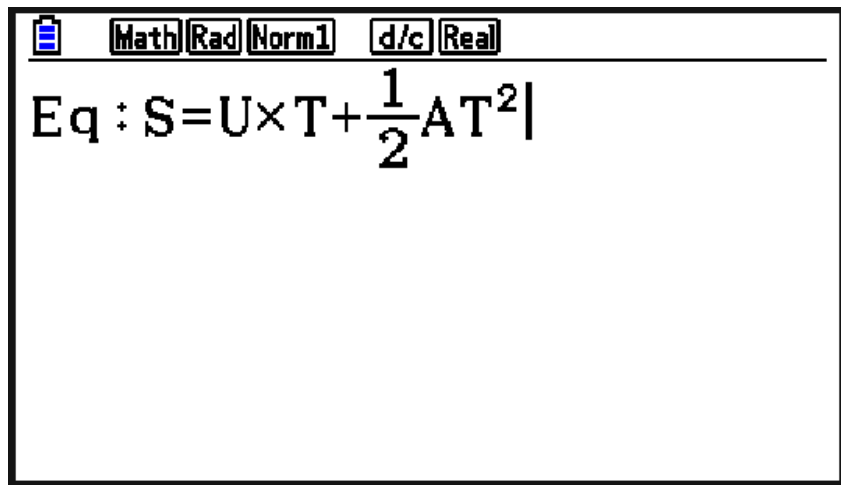
Waa maxay qiimaha (value) a marka $s = 210$, $u = 2$ iyo $t = 5$?

$$s = ut + \frac{1}{2}at^2$$

Xallinta isla'egyada (equations) tiro ahaan

Waa maxay qiimaha (value) a marka $s = 210$, $u = 2$ iyo $t = 5$?

$$s = ut + \frac{1}{2}at^2$$



The image shows a calculator interface with a black border. At the top, there is a row of buttons: a clipboard icon, 'Math', 'Rad', 'Norm1', 'd/c', and 'Real'. Below this row, the equation $s = ut + \frac{1}{2}at^2$ is displayed in a large, black, serif font. The equation is preceded by 'Eq :'. The entire interface is set against a white background.

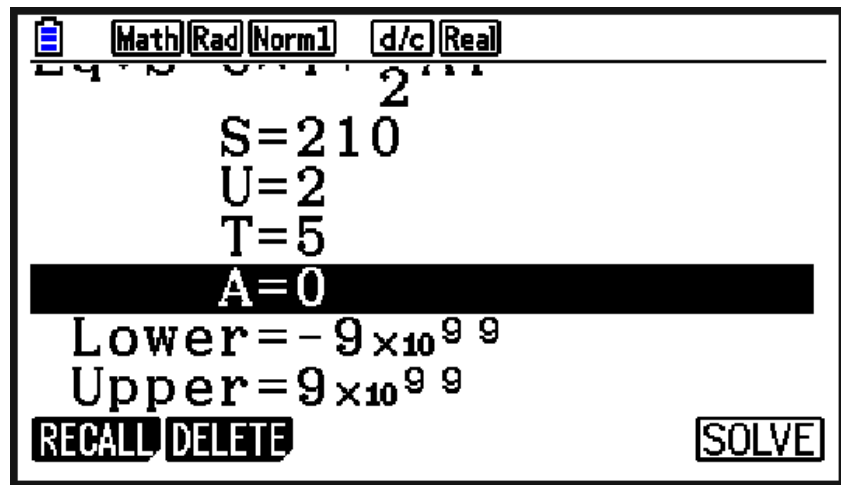
Xusuusnow inaad isticmaasho badhanka 'ALPHA' si aad u gasho doorsoomayaasha (variables).

Ma khalad inay u muuqdaan xarfo waaweyn.

Xallinta isla'egyada (equations) tiro ahaan

Waa maxay qiimaha (value) a marka $s = 210$, $u = 2$ iyo $t = 5$?

$$s = ut + \frac{1}{2}at^2$$



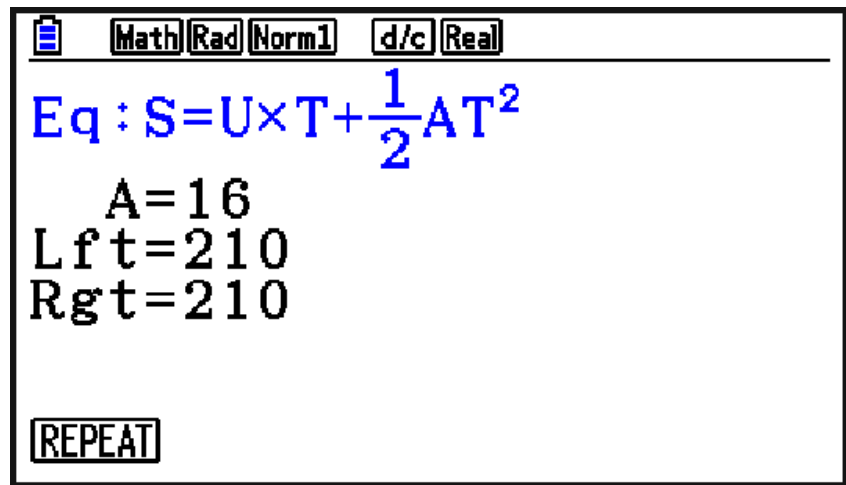
Riixida 'EXE' waxay kuu ogolaaneysaa inaad dejiso qiimaha (values) doorsoomayaasha (variables).

Geli qiimaha (values) la yaqaan oo ka tag kan aad rabto inaad hesho 0.

Xallinta isla'egyada (equations) tiro ahaan

Waa maxay qiimaha (value) a marka $s = 210$, $u = 2$ iyo $t = 5$?

$$s = ut + \frac{1}{2}at^2$$



Math Rad Norm1 d/c Real

Eq : $S = U \times T + \frac{1}{2}AT^2$

A=16
Lft=210
Rgt=210

REPEAT

Riixida 'SOLVE' (F6) waxay soo saartaa qiimaha (value) doorsoomaha (variable) haray.

Run mise been?

Qaabka 'Solver' wuxuu kaliya xallin karaa isla'egyada (equations) toosan (linear).



Run



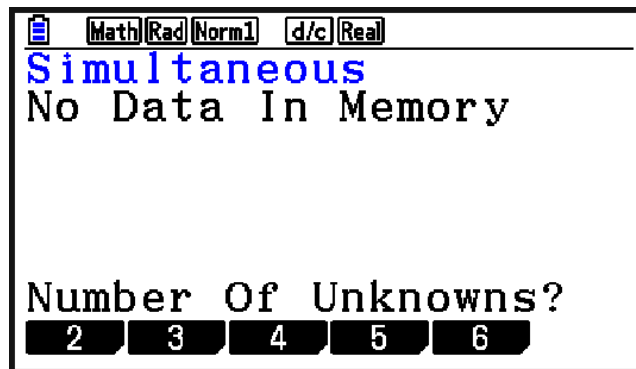
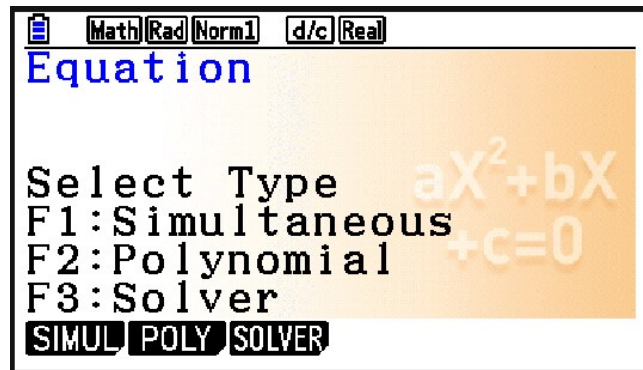
Been



Qaabka 'Solver' wuxuu kuu ogolaanayaa inaad go'aamiso qiimaha (value) doorsoome (variable) kasta oo ku jira qaacidada (formula).

Xallinta isla'egyada (equations) tiro ahaan

Xisaabiyaha (calculator) ayaa sidoo kale xallin kara laba isla'eg (simultaneous equations) oo toosan (linear).



Markii 'Equation' la doorto, dooro 'Simultaneous' adigoo riixaya F1.

Waxaan la tacaaleynaa isla'egyada (simultaneous equations) leh laba doorsoome (unknowns) marka waxaan dooranaynaa 2.

Xallinta isla'egyada (equations) tiro ahaan



Xisaabiyahaagu wuxuu aqbali doonaa oo kaliya isla'egyada (equations) qaabka $ax + by = c$, marka waxaa laga yaabaa inay lagama maarmaan tahay in dib loo habeeyo ka hor gelinta.

$$w + h + 8 = 0 \longrightarrow x + y = -8$$

$$h = 4w - 17 \longrightarrow 4x - y = 17$$

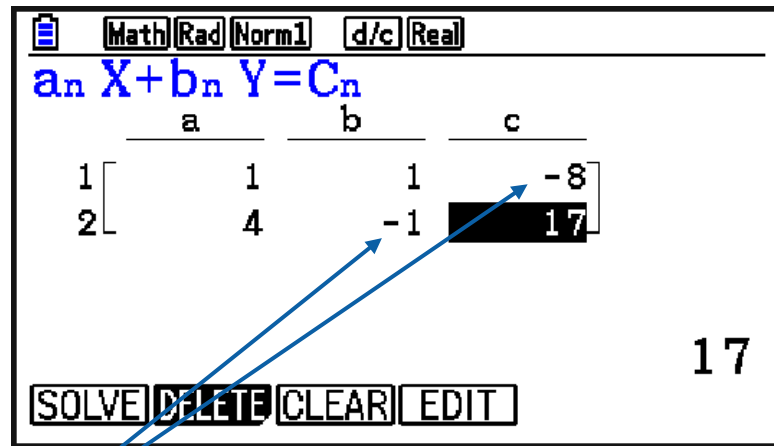
Xisaabiyuhu wuxuu isticmaalaa x iyo y , marka waxaa muhiim ah inaad ogaato variable-ka x uu matalayo iyo variable-ka y uu matalayo.

Xallinta isla'egyada (equations) tiro ahaan

Xisaabiyahaagu wuxuu aqbali doonaa oo kaliya isla'egyada (equations) qaabka $ax + by = c$, marka waxaa laga yaabaa inay lagama maarmaan tahay in dib loo habeeyo ka hor gelinta.

$$w + h + 8 = 0 \longrightarrow x + y = -8$$

$$h = 4w - 17 \longrightarrow 4x - y = 17$$



Xallinta isla'egyada (equations) tiro ahaan

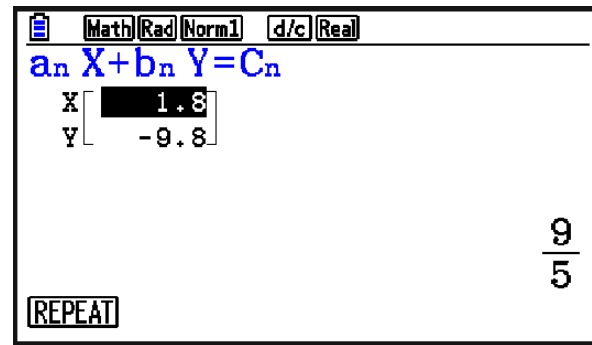
Xisaabiyahaagu wuxuu aqbali doonaa oo kaliya isla'egyada (equations) qaabka $ax + by = c$, marka waxaa laga yaabaa inay lagama maarmaan tahay in dib loo habeeyo ka hor gelinta.

$$w + h + 8 = 0 \longrightarrow x + y = -8$$

$$h = 4w - 17 \longrightarrow 4x - y = 17$$

Riixida 'SOLVE' (F1) waxay soo bandhigaysaa labada qiime (values).

Waxaan u fasiri karnaa tan sida $w = 1.8$ iyo $h = -9.8$



Run mise been?

Waxaad gelin kartaa laba isla'eg (equations) oo isku mar ah (simultaneous) oo kasta oo xisaabiyahaaga ah iyada oo aan loo baahnayn in dib loo habeeyo.



Run



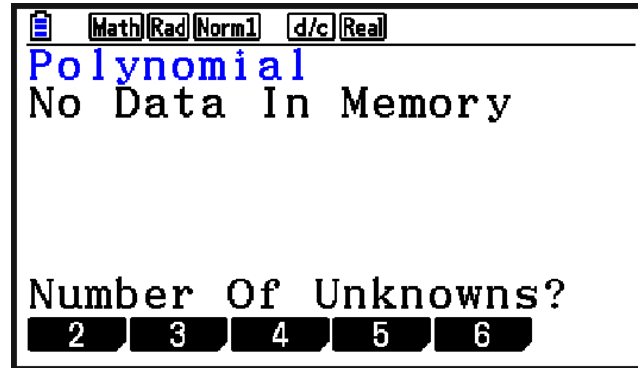
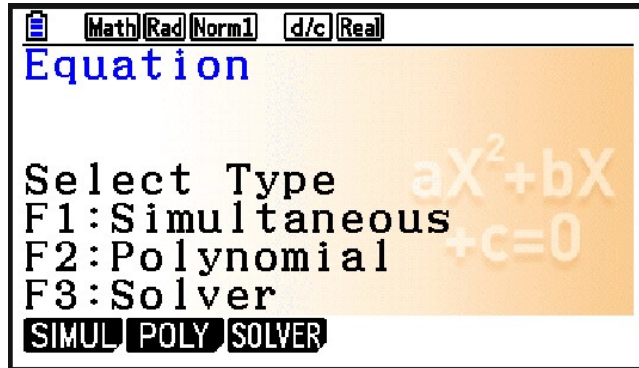
Been



Isla'egyada (equations) waa inay ahaadaan qaabka $ax + by = c$

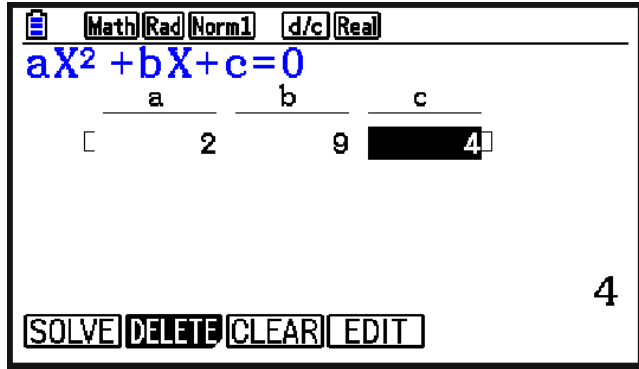
Mararka qaarkood waxaa lagama maarmaan ah in marka hore dib loo habeeyo.

Waxaad xallin kartaa isla'egyada (equations) laba jibaaran (quadratic) adoo dooranaya 'Equation' ka dibna 'Polynomial'. Doorro qaabka guud ee polynomial-ka aad rabto inaad xalliso.



Xallinta isla'egyada (equations) tiro ahaan

Xalli $2x^2 + 9x + 4 = 0$



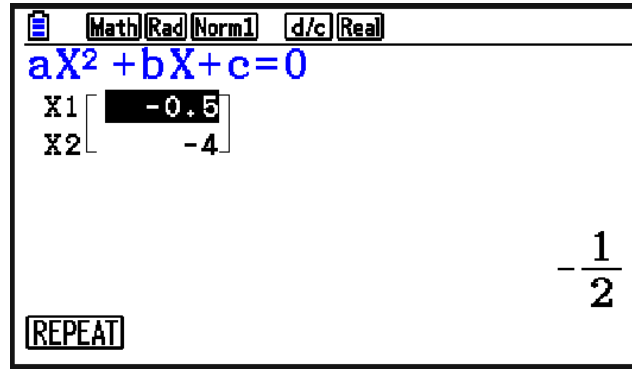
Math Rad Norm1 d/c Real

$aX^2 + bX + c = 0$

a b c

2 9 4

SOLVE DELETE CLEAR EDIT



Math Rad Norm1 d/c Real

$aX^2 + bX + c = 0$

X1 [-0.5]

X2 [-4]

REPEAT

$-\frac{1}{2}$

Xisaabiyahaagu wuxuu aqbali doonaa oo kaliya isla'egyada (equations) qaabka $ax^2 + bx + c = 0$, marka waxaa laga yaabaa inay lagama maarmaan tahay in marka hore dib loo habeeyo.

Riix 'SOLVE' (F1) si aad u xalliso.

Xallinta isla'egyada (equations) tiro ahaan

Isticmaal xisaabiyahaaga si aad u hesho xallinta (solution(s)) ee $x^2 + 8x - 20 = 0$

$$x = 2$$

$$x = -10$$

Math Rad Norm1 d/c Real

$aX^2 + bX + c = 0$

a	b	c
1	8	-20

-20

SOLVE DELETE CLEAR EDIT

1) Xalliyaan (Solve) lamaanaha isla'egyada (simultaneous equations) ee soo socda adigoo isticmaalaya xisaabiyahaaga (calculator).

a)

b)

$$2a + 3b = 1$$

$$-a + 4b = 8$$

$$2b + a = 8$$

$$2b + 3 = 7a$$

2) Xisaabi xalalka (solutions) isla'egyadan (quadratic equations).

a) $-x^2 - 8x + 20 = 0$

b) $x^2 + 8x - 19 = 0$

c) $x^2 + 6x + 8 = 3$

d) $5x^2 - x + 5 = 3x^2 - 10x - 2$

1) Xalliyaan (Solve) lamaanaha isla'egyada (simultaneous equations) ee soo socda adigoo isticmaalaya xisaabiyahaaga (calculator).

a)

b)

$$2a + 3b = 1$$

$$-a + 4b = 8$$

$$a = -\frac{20}{11} \text{ or } -1\frac{9}{11}$$

$$b = \frac{17}{11} \text{ or } 1\frac{6}{11}$$

$$2b + a = 8$$

$$2b + 3 = 7a$$

$$a = \frac{11}{8} \text{ or } 1\frac{3}{8}$$

$$b = \frac{53}{16} \text{ or } 3\frac{5}{16}$$

2) Xisaabi xalalka (solutions) isla'egyadan (quadratic equations).

a) $-x^2 - 8x + 20 = 0$ $x = -10$ ama $x = 2$

b) $x^2 + 8x - 19 = 0$

$$x = -4 + \sqrt{35} \text{ or } x = -4 - \sqrt{35}$$

c) $x^2 + 6x + 8 = 3$ $x = -5$ ama $x = -1$

d) $5x^2 - x + 5 = 3x^2 - 10x - 2$ $x = -1$ ama $x = -3.5$

Qaar ka mid ah xisaabiyayaasha (calculators) waxay qaban karaan wax ka badan xisaabinta aasaasiga ah.

fx-CG50 wuxuu xallin karaa isla'egyada (equations) garaaf ahaan (graphically) iyo tiro ahaan (numerically).