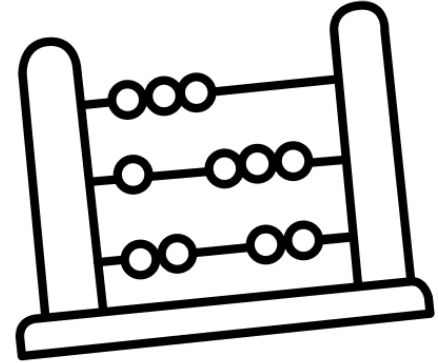


Isticmaalka fx-991CW ee tirooyinka iyo aljabra (algebra)



Maths

Unit Shaqada xisaabiyaha (calculator)

Natiijo

Waxaan awoodi karaa inaan isticmaalo fx-991CW si aan u sameeyo xisabinta tirooyinka iyo xallinta isla'egyada (equations) tiro ahaan.

Erayada muhiimka ah

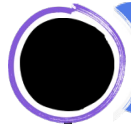
Cunsuriyaha (factors) asaasiga ah waa cunsuriyaha tiro ee qudhoodu yihiin tiro asaasi ah (prime).

Isla'eg (equation) waxaa loo isticmaalaa in lagu muujiyo 2 tibaax oo isla eg.

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

Sinnaan la'aan (inequality) waxaa loo isticmaalaa in lagu muujiyo in hal tibaax (expression) laga yaabo inuusan la mid ahayn mid kale.

Isticmaalka fx-991CW ee tirooyinka iyo aljabra (algebra)



Beddelka (Conversions)



Xallinta isla'egyada toosan (linear equations)



Xallinta polynomials

Beddelka (Conversions)

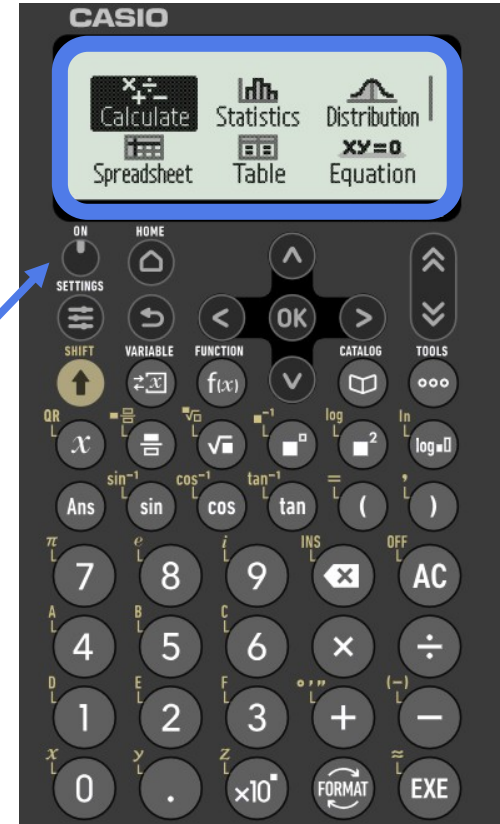


Sharaxaad

Darsigan, waxaan isticmaali doonaa nooca Casio fx-991CW.

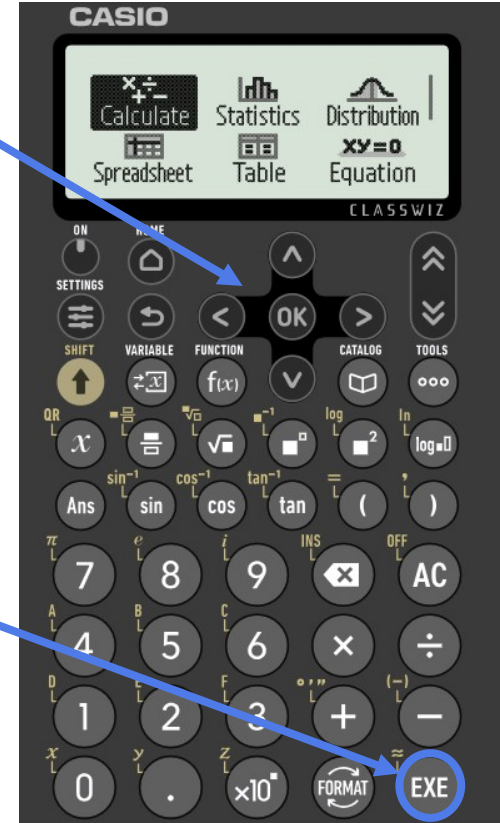
Waxaan dabooli doonaa sida loo isticmaalo xisaabiyahan si loo sameeyo xisabinta kala duwan.

Ka dib markaad shido xisaabiyaha, waxaad arki doontaa shaashaddan.

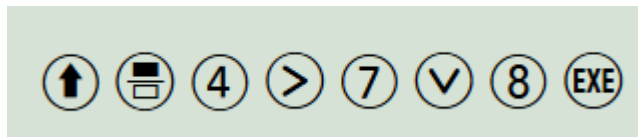


Waxaad isticmaali kartaa furayaasha fallaadha (arrow keys) si aad u dhaqaaqdid inta u dhaxaysa ikhtiyaarrada. Hadda, waxaan diiradda saaraynaa 'Calculate'.

Riix badhanka 'EXE'.



Gelinta tiro isku dhafan (mixed number) ee xisaabiyaha iyo riixida 'EXE' waxay soo celisaa isla qiime (value) laakiin sida jajib aan habboonayn (improper fraction).



Maxay tahay waxa gelinta jajab aan habboonayn (improper fraction) ee xisaabiyaha iyo riixida 'EXE' ay soo celiso?

a Isla jajabka aan habboonayn (improper fraction) ✓

b Isla qiimaha (value) laakiin sida tiro isku dhafan (mixed number)

c Isla qiimaha (value) laakiin sida jajab tobanle (decimal)



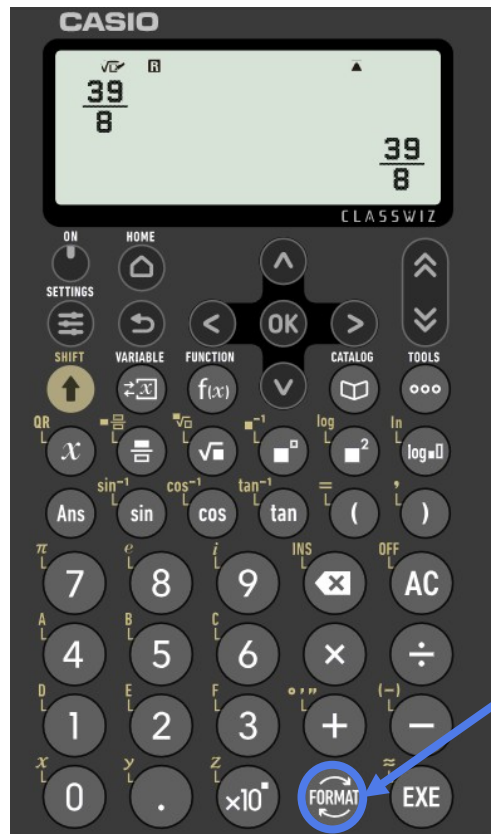
Caasha

Sidee baan u beddelaa jajabka aan habboonayn (improper fraction) iyo tirooyinka isku dhafan (mixed numbers)?

Waxaad u baahan tahay
inaad  aasho badhanka



Saciid



Marka jajab aan habboonayn (improper fraction) la muujiyo, waxaad bedeli kartaa qaabka qiimaha (value) adigoo riixaya badhanka 'FORMAT'.

Qiimaha (value) waxaa loo muujin karaa jajab tobanle (decimal), jajab aan habboonayn (improper fraction), ama jajab isku dhafan (mixed fraction).



Adigoo isticmaalaya xisaabiyahaaga, dooro qaabka jajabka tobanle (decimal) ee u dhigma

$$\frac{1349}{52}$$

a

25.94237096

b

25.94236269

c

25.94230769





Caasha

Ma wax badan oo kale ayaa
xisaabiyahaygu beddeli karaa?

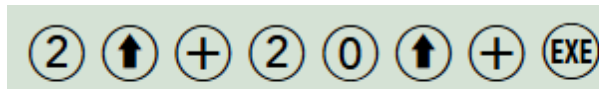
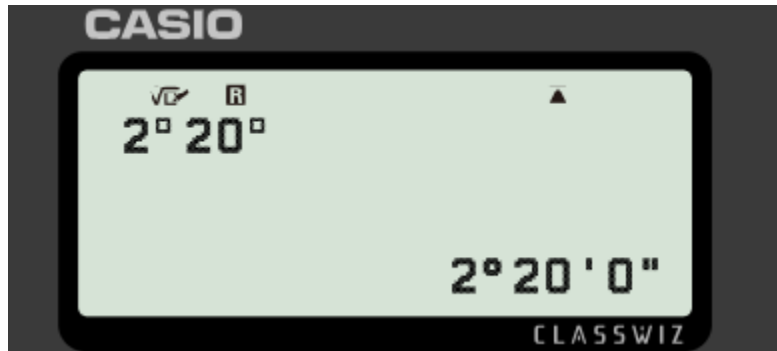
Haa! Waxaad sidoo kale ku
beddeli kartaa waqti.



Saciid

Beddelka (Conversions)

U beddel 2 saacadood iyo 20 daqiiqo saacado.

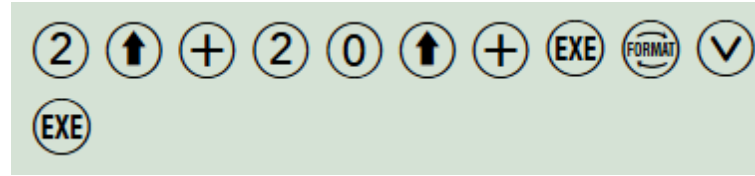
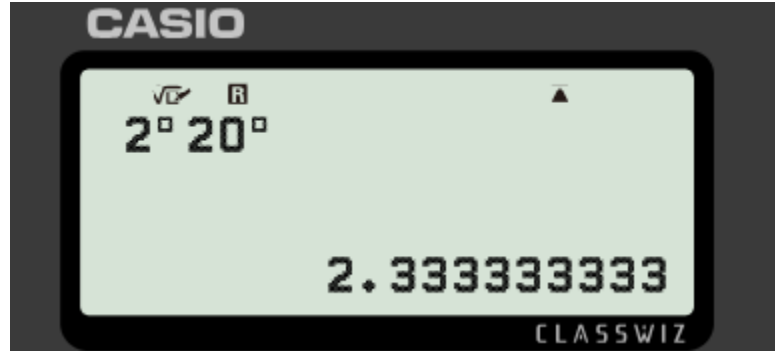


Riixida badhanka 'SHIFT', ka dibna '+' waxay noo ogolaaneysaa inaan ku qorno qaabka 'saacad, daqiiqad, ilbiriqsi'.



Beddelid (Conversions)

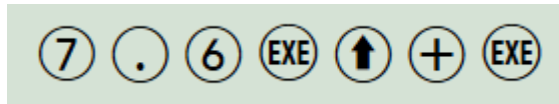
U beddel 2 saacadood iyo 20 daqiiqo saacado.



Riixida furaha 'FORMAT' waxay kuu ogolaaneysaa inaad wakhtiga ku muujiso siyaabo kala duwan.

$$2 \text{ hr and } 20 \text{ min} = 2.\dot{3} \text{ hr} = \frac{7}{3} \text{ hr} = 2\frac{1}{3} \text{ hr}$$

Qiime (value) saacaduhu waxaa loo beddeli karaa saacado, daqiiqooyin iyo ilbiriqsi.



Riixida badhanka 'SHIFT', oo ay ku xigto '+', waxay u beddeshaa qaabka 'saacad, daqiiqad, ilbiriqsi'.

7.6 saacadood = 7 saacadood iyo 36 daqiiqo (0 ilbiriqsi)

3.875 saacadood waxay u dhigmaan wakhti intee le'eg?

a 3 saacadood, 8 daqiiqo iyo 8 ilbiriqsi

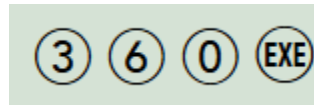
b 3 saacadood, 45 daqiiqo iyo 8 ilbiriqsi

c 3 saacadood, 52 daqiiqo iyo 30 ilbiriqsi



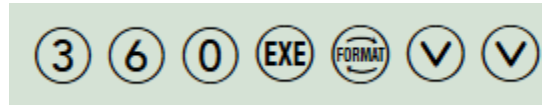
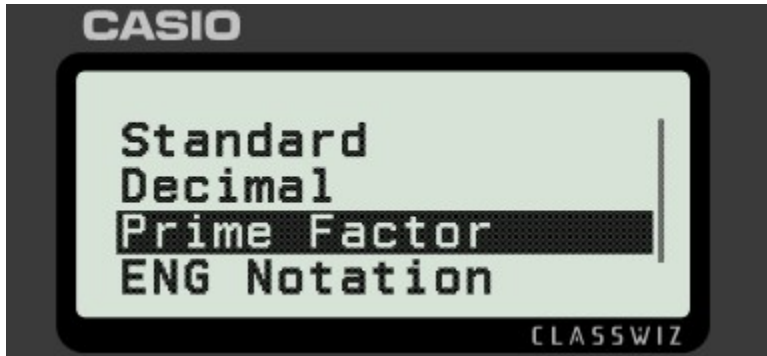
Tirooyinka waxaa loo qori karaa qaabka cunsuriyaha (prime factor) tusaale: $49 = 7 \times 7$ iyo $124 = 2 \times 2 \times 31$

Muuji 360 qaabka cunsuriyaha (prime factor).



Riix 'FORMAT' oo dooro 'Cunsuriyaha (Prime Factor)'.

Muuji 360 qaabka cunsuriyaha (prime factor).



Riixida 'EXE' waxay ku siinaysaa tirada qaabka cunsuriyaha (prime factor).

Muuji 360 qaabka cunsuriyaha (prime factor).



Beddelid (Conversions)

Dooro tirada maqan: $10\ 375\ 750 = 2 \times 53 \times 7 \times 112$



a 2

b 3 ✓

c 4

1) U beddel waqtiyadan soo socda saacadood.

a) 1 saac iyo 15 daqiiqo

b) 2 saacadood, 20 daqiiqo iyo 20 ilbiriqsi

c) 4 saacadood, 15 daqiiqo iyo 16 ilbiriqsi

2) U beddel tirada saacadaha soo socda saacad, daqiiqo iyo ilbiriqsi.

a) 7.25

b) 3.7

c) 7.42

d) 3.63

3) Buuxi meelaha bannaan.

a) $121 = \square^2$

b) $5500 = 2\square \times \square^3 \times 11$

c) $384 = 2^7 \square \times 2^2 \square$

d) $351 = 3\square \times \square \times 13$

1) U beddel waqtiyadan soo socda saacadood.

a) 1 saac iyo 15 daqiiqo = 1.25

b) 2 saacadood, 20 daqiiqo iyo 20 ilbiriqsi = 2.338

c) 4 saacadood, 15 daqiiqo iyo 16 ilbiriqsi = 4.254

2) U beddel tirada saacadaha soo socda saacad, daqiiqo iyo ilbiriqsi.

a) $7.25 = 7$ saacadood iyo 15 daqiiqo

b) $3.7 = 3$ saacadood iyo 42 daqiiqo

c) $7.42 = 7$ saacadood, 25 daqiiqo iyo 12 ilbiriqsi

d) $3.63 = 3$ saacadood, 37 daqiiqo iyo 48 ilbiriqsi

3) Buuxi meelaha bannaan.

a) $121 = 11^2$

b) $5500 = 2 \times \text{[]}^3 \times 11$

c) $384 = 2 \times 3^{\text{[2]}} \times 5^{\text{[5]}}$

d) $351 = 3 \times \text{[?]}^{\text{[7]}} \times 13^{\text{[]}} \times \text{[1]}$

Qiimaha (value) ay ka kooban yihiin su'aalaha waa inay la mid noqdaan 1.

Tan waxaa lagu samayn karaa iyadoo la helo sal (base) 1 ah iyo jibbaar (exponent) kasta, ama iyadoo la helo sal (base) kasta iyo jibbaar (exponent) 0 ah.

Isticmaalka fx-991CW ee tirooyinka iyo aljabra (algebra)



Beddelka (Conversions)



Xallinta isla'egyada toosan (linear equations)



Xallinta polynomials



Caasha

Marka maxaa kale oo xisaabiyaha
(calculator) igu samayn karaa?

Wuxuu xallin karaa noocyada
qaarkood ee isla'egyada
(equations).



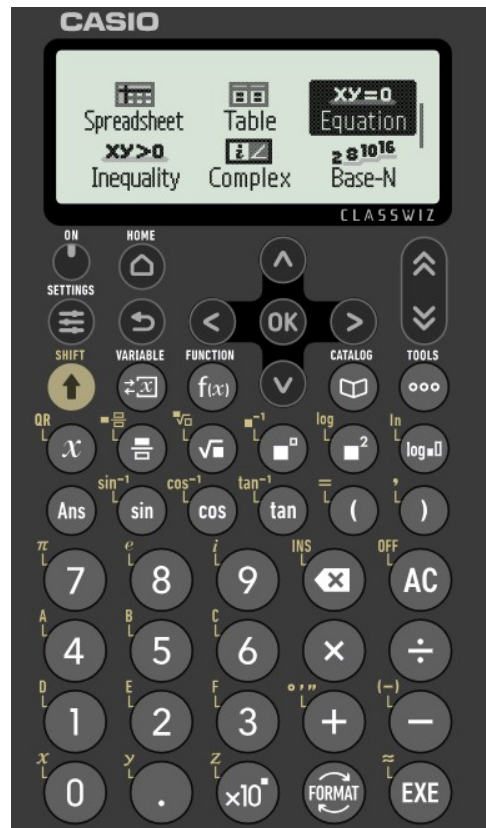
Saciid

Xallinta isla'egyada toosan (linear equations)

Laga bilaabo shaashadda 'HOME', waxaad hoos u dhaadhacdaa si aad u aragto ikhtiyaarro dheeri ah.

Waxaan eegi doonnaa 'Equation' iyo 'Inequality' labadaba.

Waxaan ku bilaabi doonnaa 'Equation'.



Xalli isla'egta $9x - 7 = 25$



Hore ayaan uga ogahay sida loo sameeyo! Jawaabtu waa

$$x = 3\frac{5}{9}$$

Caasha

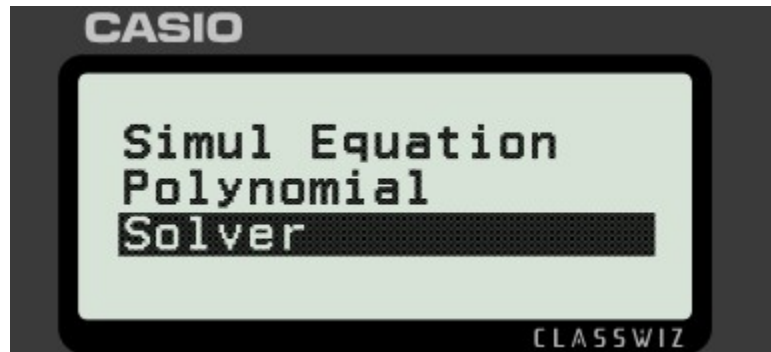
Caasha ma sax baa?

Waxaan hubin karnaa iyadoo:

- Dib-u-habaynta iyo xallinta
- Isticmaalka xisaabiyaha (calculator)

Xallinta isla'egyada toosan (linear equations)

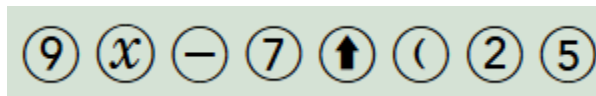
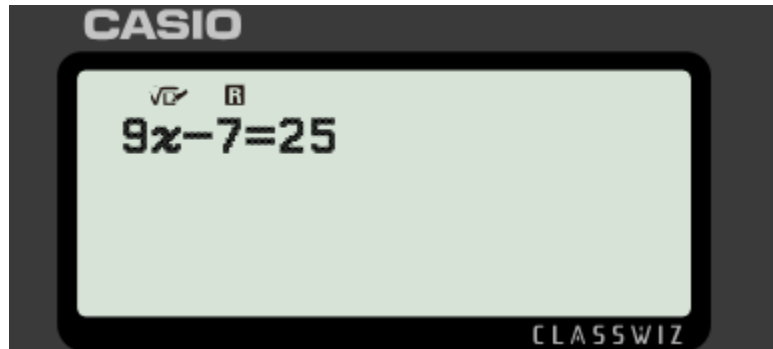
Xalli isla'egta $9x - 7 = 25$



Laga soo bilaabo menu-ga guriga, dooro 'Equation' ka dibna u gudub 'Solver'.

Xallinta isla'egyada toosan (linear equations)

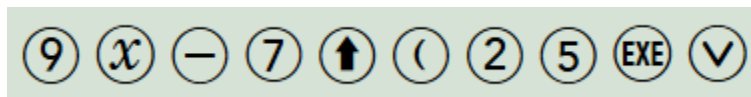
Xalli isla'egta $9x - 7 = 25$



Si aad u geliso isla'egta, waxaanu isticmaadaa  a badhanka si aan u matalno doorsoome (variable) iyo calaamadda '=' oo ku taal koritaanka xarafka bidix.

Xallinta isla'egyada toosan (linear equations)

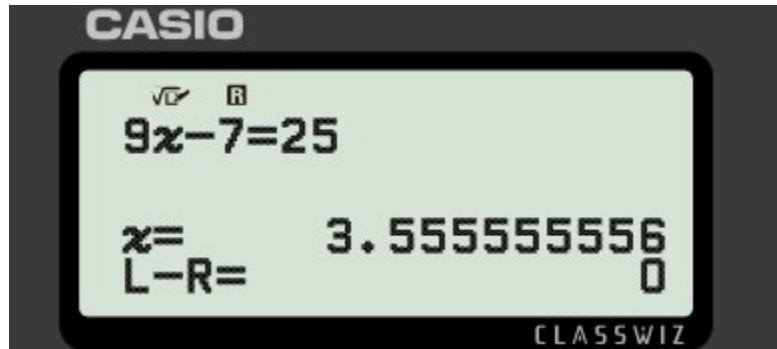
Xalli isla'egta $9x - 7 = 25$



Riix 'EXE'. U gudub ikhtiyaarka 'Execute' oo riix 'EXE'.

Xallinta isla'egyada toosan (linear equations)

Xalli isla'egta $9x - 7 = 25$



Qiimaha (value) doorsoomaha ayaa hadda la muujiyay.

Qaabkan waxaa loo isticmaali karaa in lagu xalliyo isla'egyada toosan (linear equations) oo leh hal doorsoome.

Xallinta isla'egyada toosan (linear equations)

Run mise been?

Qaabka 'Solver' wuxuu xallin karaa isla'egtan, iyada
aan loo baahnayn dib-u-habayn.

$$\frac{50 - x}{3} = \frac{3 - x}{5}$$



Run



Been

Isku day adiga. Waa inaad ogaataa in $x = 8$

Xallinta isla'egyada toosan (linear equations)



Run mise been?

Qaabka 'Solver' wuxuu xallin karaa isla'egtan, iyada oo aan loo baahnayn dib-u-habayn: $4 = 5y + 19$



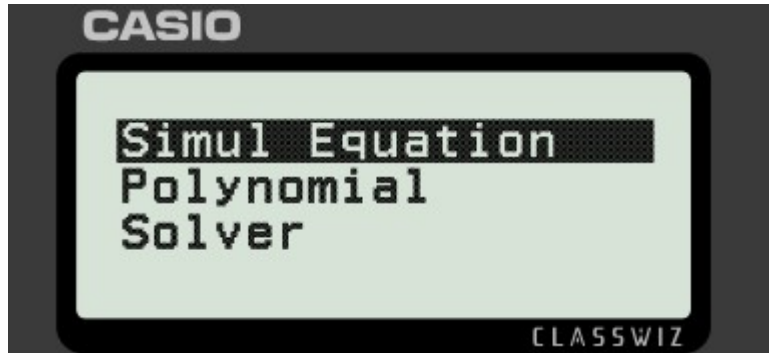
Run



Been

Isku day adiga. Waxaad u baahan doontaa inaad ku qorto x halkii y ee xisaabiyahaaga. Waa inaad ogaataa in $y = -3$

Xisaabiyaha ayaa sidoo kale xallin kara laba isla'eg oo toosan oo isku mar ah (simultaneous equations).



Ka bixi menu-ga guriga, dooro 'Equation' ka dibna u gudub 'Simul Equation'. Kadib dooro '2 Unknowns'.

Xallinta isla'egyada toosan (linear equations)



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

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

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

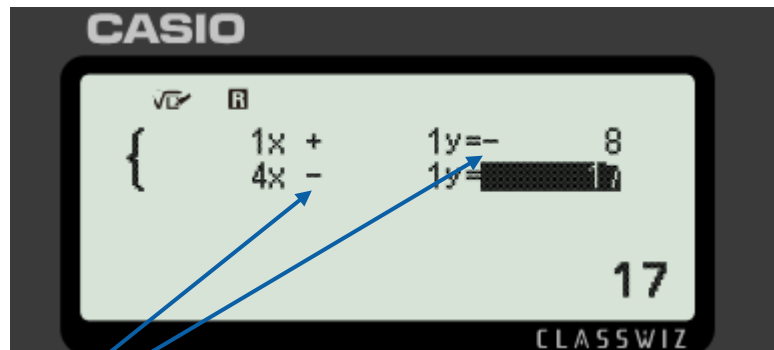
Xisaabiyuhu wuxuu isticmaalaa x iyo y , marka waxaa muhiim ah inaad ogaato variable-ka x uu matalayo iyo variable-ka y uu matalayo.

Xallinta isla'egyada toosan (linear equations)

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

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

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



Ka digtoonow qiimaha (values) taban.

Xallinta isla'egyada toosan (linear equations)

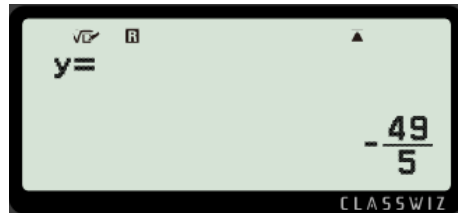
Xisaabiyahaagu wuxuu aqbali doonaa oo kaliya isla'egyada qaabka $ax + by = c$, sidaa darteed waxaa laga yaabaa inay lagama maarmaan tahay in dib loo habeeyo ka hor gelinta.

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

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



A calculator screen from the CLASSWIZ app showing the result $x = \frac{9}{5}$. The screen has a light green background and a black border. The text 'x=' is on the left, and the fraction $\frac{9}{5}$ is on the right. The CLASSWIZ logo is at the bottom right.



A calculator screen from the CLASSWIZ app showing the result $y = -\frac{49}{5}$. The screen has a light green background and a black border. The text 'y=' is on the left, and the fraction $-\frac{49}{5}$ is on the right. The CLASSWIZ logo is at the bottom right.

Riixida 'EXE' waxay siinaysaa hal qiime (value), riixida 'EXE' mar kale waxay muujinaysaa qiimaha (value) labaad.

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

Run mise been?

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



Run



Been



Isla'egyadu waa inay ahaadaan qaabka $ax + by = c$

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

1) Xalli kuwan soo socda iyada oo aan la isticmaalin xisaabiye, ka dibna hubi jawaabahaaga adigoo isticmaalaya xisaabiyaha.

Habkee ayaa ka dhakhso badan?

a) $\frac{1}{2}x + 7 = 25$ b) $\frac{3x - 5}{2} = \frac{2x + 1}{10}$ c) $8(y + 5) = 13 - \frac{y + 5}{2}$

2) Xalli labada isla'eg ee isku mar ah (simultaneous equations) ee soo socda adigoo isticmaalaya xisaabiyahaaga.

a)

b)

$$2a + 3b = 1$$

$$-a + 4b = 8$$

$$2b + a = 8$$

$$2b + 3 = 7a$$

1) Xalli kuwan soo socda iyada oo aan la isticmaalin xisaabiye, ka dibna hubi jawaabahaaga adigoo isticmaalaya xisaabiyaha.

Waa kee habka xallinta (solving) ee ka dhakhsaha badan?

a) $\frac{1}{2}x + 7 = 25$

$$x = 36$$

b) $\frac{3x - 5}{2} = \frac{2x + 1}{10}$

$$x = 2$$

c) $8(y + 5) = 13 - \frac{y + 5}{2}$

$$y = -3.47058\dots$$

$$y = -\frac{59}{17}$$

2) Xalli labada isla'eg oo isku mar ah (simultaneous equations) adigoo isticmaalaya xisaabiyahaaga.

a)

$$2a + 3b = 1$$

$$-a + 4b = 8$$

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

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

b)

$$2b + a = 8$$

$$2b + 3 = 7a$$

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

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

Isticmaalka fx-991CW ee tirooyinka iyo aljabrada (algebra)



Beddelka (Conversions)



Xallinta isla'egyada toosan (linear equations)



Xallinta polynomials



Caasha

Marka xisaabiyuhu wuu xallin karaa isla'egyada toosan (linear equations), oo ay ku jiraan kuwa isku mar ah (simultaneous). Wax kale ma jiraan?

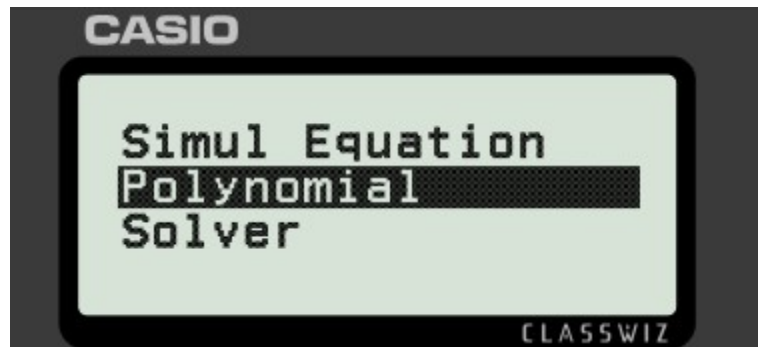
Wuxuu xallin karaa isla'egyada polynomial. Sidoo kale wuxuu xallin karaa sinnaan-la'aanta quadratic (quadratic inequalities).



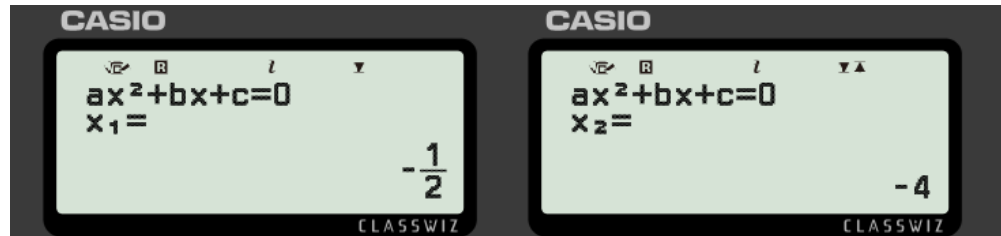
Saciid

Xallinta polynomials

Laga soo bilaabo menu-ga guriga, dooro 'Equation' ka dibna u gudub oo dooro 'Polynomial'. Doorro qaabka guud ee polynomial-ka aad rabto inaad xalliso.



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



Xisaabiyahaagu wuxuu aqbali doonaa oo kaliya isla'egyada qaabka $ax^2 + bx + c = 0$, marka waxaa laga yaabaa inay lagama maarmaan tahay inaad hore u habaysid.

Riix 'EXE' si aad u xalliso. Riix 'EXE' mar kale si aad u aragto xalka labaad.

Xallinta polynomials

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

$$x = 2$$

$$x = -10$$



$$\text{Xalli } x^2 + 8x - 20 < 0$$

Waxaan isticmaali doonaa xisaabiyaha (calculator) si aan u helo xididdada (roots) ka dibna aan ogaado habka calaamadaha sinnaan-la'aanta (inequality) ay u socdaan.



Caasha

Waxaad samayn kartaa taas ama...



Saciid

Xallinta polynomials

Laga bilaabo menu-ga guriga, dooro 'Inequality'. Dooro qaabka guud ee polynomial-ka aad rabto inaad xalliso.



Xalli $x^2 + 8x - 20 < 0$

Hubi inaad dooratay sinnaan-la'aanta (inequality) saxda ah.



Xallinta polynomials

Isticmaal xisaabiyaha (calculator) si aad u hesho xalalka (solutions) ee $x^2 + 8x - 20 < 0$

$$-10 < x < 2$$



1) Xalli sinnaan-la'aantan quadratic (ilaa 2 d.p. haddii ay habboon tahay).

a) $-x^2 - 8x + 20 \geq 0$

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

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

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

1) Xalli sinnaan-la'aantan quadratic (ilaa 2 d.p. haddii ay habboon tahay).

$$\text{a) } -x^2 - 8x + 20 \geq 0 \qquad -10 \leq x \leq 2$$

$$\text{b) } x^2 + 8x - 19 < 0 \qquad -9.92 < x < 1.92$$

$$\text{c) } x^2 + 6x + 8 < 3 \qquad -5 < x < -1$$

$$\text{d) } 5x^2 - x + 5 > 3x^2 - 10x - 2 \qquad x < -\frac{7}{2}, \quad -1 < x$$

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

fx-991CW waxay u beddeli kartaa qaabab kala duwan oo qiimaha (values) ah.

fx-991CW waxay si tiro (numerically) u xallin kartaa isla'egyada (equations).