Solving Equations Using x-Intercept Method -2 <small>Classic View</small>

Objectives:

- Use the Zero calculation to find solutions in more difficult situations

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PRO TIP: If the graph does not cross the x-axis, there is no solution. One way this can happen is if the graph is a horizontal line (other than the x-axis).

Example 1: Use the x-intercept of difference method to find the solution of $3x - 7 = 3x + 2$

Press:

		statplot f1		L3	θ link	]	W u	O]	W L3	θ link	]	W L2	Z format f3 L6	V
y=	clear	3	X,T,θ,n	−	7	−	3	X,T,θ,n	−	2	zoom	6
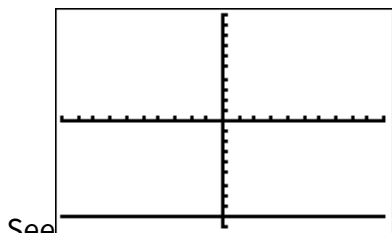
See ⬚ This graph has no x-intercept. Answer: <u>No solution.</u>

IMPORTANT: If there are two (or more) points of intersection, use the same method twice (or more): once for each solution. You must choose the "Guess?" more carefully when there is more than one.
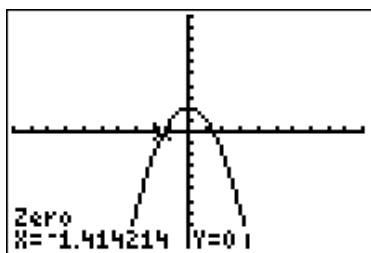
Example 2: Use the x-intercept of difference method to find the solution of $9 - x^2 = 7$. Round to the nearest hundredth.

Set equal to zero: $9 - x^2 - 7 = 0$. Graph $y_1 = 9 - x^2 - 7$.

statplot f1		w	Q]	W link	√	I]	W u	O format f3 L6	V
y=	clear	9	−	X,T,θ,n	x²	−	7	zoom	6

Notice two x-intercepts, and use zero twice.

	calc	f4 L2	Z		entry solve		entry solve entry solve

Press 2nd trace 2 ◄ 5-6 times, enter , ► twice, enter enter .

Zero
X=-1.414214 Y=0

calc   f4 L2   Z

| 2nd | trace | 2 | ▶ |

about 10 times,

entry solve

| enter | ▶ |

about 5 times,

entry solve entry solve
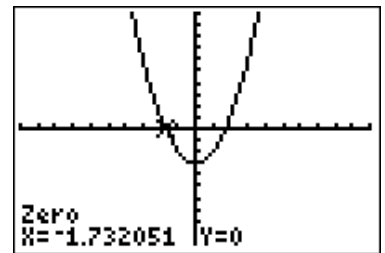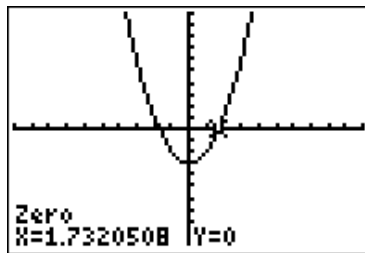
| enter | enter | .

Answers: $x \approx 1.41, -1.41$

Try It!

Solve each equation graphically using the x-intercept method. Round to the nearest hundredth if needed.
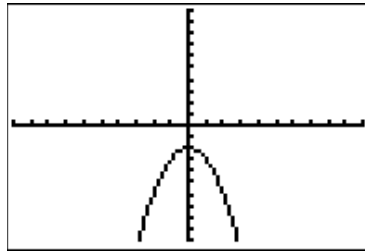
1) $5 + x^2 = 8$

2) $5 - x^2 = 7$

Solutions

1) $5 - 8 + x^2 = 0$ $y_1 = -3 + x^2$ calculate twice.

Answer: $x \approx 1.73, -1.73$

2) $5 - x^2 = 7$ $5 - 7 - x^2 = 0$ $y_1 = -2 - x^2$ Graph has no x-intercepts.

Answer: no solution