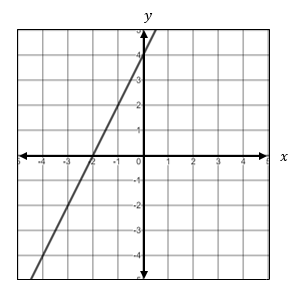
Just In Time Quick Check

[Standard of Learning (SOL) A.7](https://www.doe.virginia.gov/home/showpublisheddocument/2866/637982462406870000)c

| Strand:Functions |
| --- |
| Standard of Learning (SOL) A.7c *The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including zeros.* |
| Grade Level Skills:  * Identify the domain, range, zeros, and intercepts of a function presented algebraically or graphically. * Use the *x*-intercepts from the graphical representation of a quadratic function to determine and confirm its factors. * Investigate and analyze characteristics and multiple representations of functions with a graphing utility. |
| [**Just in Time Quick Check**](#bookmark=id.gjdgxs) |
| [**Just in Time Quick Check Teacher Notes**](#teacher) |
| Supporting Resources:  * VDOE Mathematics Instructional Plans (MIPS)   + [A.7bcd - Functions 2: Exploring Quadratic Functions](https://www.doe.virginia.gov/home/showpublisheddocument/15956/638035206233170000) (Word) / [PDF Version](https://www.doe.virginia.gov/home/showpublisheddocument/15958/638035206239270000)   + [A.7cd - Quadratic Connections](https://www.doe.virginia.gov/home/showpublisheddocument/15964/638035206254730000) (Word) / [PDF Version](https://www.doe.virginia.gov/home/showpublisheddocument/15966/638035206260970000)   + [A.7cd - Solving Linear Equations Using Functions with Desmos](https://www.doe.virginia.gov/home/showpublisheddocument/15960/638035206243970000) (Word) / [PDF Version](https://www.doe.virginia.gov/home/showpublisheddocument/15962/638035206249570000) * VDOE Algebra Readiness Formative Assessments   + [A.7c,d](https://www.doe.virginia.gov/home/showpublisheddocument/30986/638046554983300000) (Word) / [PDF](https://www.doe.virginia.gov/home/showpublisheddocument/30988/638046554989270000) * VDOE Word Wall Cards: Algebra I   [(Word)](https://www.doe.virginia.gov/home/showpublisheddocument/18630/638041054191430000)  |  [(PDF)](https://www.doe.virginia.gov/home/showpublisheddocument/18628/638041054182370000)   + Solutions or Roots, Zeros, x-Intercepts   + Parent Functions - Linear, Quadratic * VDOE Rich Mathematical Tasks: The Soccer Competition   + [A.7 The Soccer Competition Task Template](https://www.doe.virginia.gov/home/showpublisheddocument/26568/638045686349330000) (Word) / [PDF Version](https://www.doe.virginia.gov/home/showpublisheddocument/26570/638045686354630000) * Desmos Activities   + [Transforming Lines](https://teacher.desmos.com/activitybuilder/custom/5beeffea3d231b0c5a36db5f)   + [Two Truths and a Lie: Quadratics](https://teacher.desmos.com/activitybuilder/custom/5d337131828b87201c4ca136)   + [What’s My Transformation?](https://teacher.desmos.com/activitybuilder/custom/56001cb3ccac42274a00be25)   + [Polygraph: Parabolas](https://teacher.desmos.com/polygraph-parabolas) and [Polygraph: Parabolas Part 2](https://teacher.desmos.com/activitybuilder/custom/574f12421390db611564fa32)   + [Polygraph: Quadratics](https://teacher.desmos.com/polygraph/custom/5bbb6c34ac8e9f0b29fcdbb8)   + [Will It Hit the Hoop?](https://teacher.desmos.com/activitybuilder/custom/56e0b6af0133822106a0bed1) |
| **[Supporting and Prerequisite SOL](https://www.doe.virginia.gov/teaching-learning-assessment/k-12-standards-instruction/mathematics/instructional-resources/just-in-time-mathematics-quick-checks)**: [A.1b](https://www.doe.virginia.gov/home/showpublisheddocument/25352/638045617786030000), [A.2c](https://www.doe.virginia.gov/home/showpublisheddocument/25364/638045617817630000), [A.4b](https://www.doe.virginia.gov/home/showpublisheddocument/25384/638045617867000000), [A.7b](https://www.doe.virginia.gov/home/showpublisheddocument/25432/638045619538500000) |

SOL A.7c - Just in Time Quick Check

1. What is the zero of ?
2. The graph of is shown. What is the solution to ?



1. What are the root(s) of the function ?
2. If a second-degree polynomial function with a leading coefficient of 1 has zeros of and , what is the factored form of this function?
3. Let and . For what value of is the zero of equivalent to the zero of ?

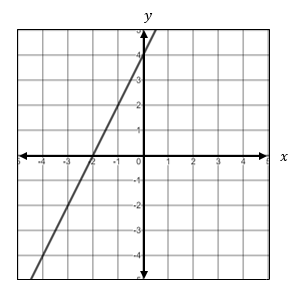
SOL A.7c - Just in Time Quick Check Teacher Notes

**Common Errors/Misconceptions and their Possible Indications**

1) What is the zero of ?

*A common error would be for a student to replace x with 0 instead of replacing y. This indicates a misunderstanding that a zero is the value where the function is set equal to zero. A strategy that could be used is to graph the function to show where it crosses the x-axis is also where the function is equal to 0.*

1. The graph of is shown. What is the solution to ?



*A common error would be for a student to include the y-intercept as a zero of the function. This indicates a misunderstanding that zeros are both x and y-intercepts. The definition of zero should be reviewed with the student. A strategy that could be used is to list the intercepts as a set of ordered pairs or as a table to demonstrate that only the x-intercept value is where the entire function is equal to zero.*

3) What are the root(s) of the function ?

*A common error is for a student to only list the positive zero of 2 instead of both the positive and negative zero. This indicated a misconception that there can be more than one zero and zeros can be positive or negative values. A strategy that could be used is the graph the function using Desmos or graph paper and show how at both zeros the function is equal to zero.*

1. If a second-degree polynomial function with a leading coefficient of 1 has zeros of and , what is the factored form of this function?

*A common error a student may make is to write the factored form as . This indicates a misunderstanding of the connection between x-intercepts and factors. A strategy that could be used is to review the connection between factors and solutions. This could be done algebraically or graphically.*

5) Let and . For what value of is the zero of equivalent to the zero of ?

*A common error would be for a student to say that , which is the zero of . This indicates the student would benefit from additional practice in comparing functions and working with constant variable terms. A strategy that could be used is for the students to experiment with the slider feature in Desmos to demonstrate what happens to the graph and equation of as changes in value.*