Just In Time Quick Check

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

| Strand:Functions |
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| Standard of Learning (SOL) A.7d *The student will investigate and analyze linear and quadratic function families and their characteristics both*  *algebraically and graphically, including intercepts.* |
| 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**](#quick) |
| [**Just in Time Quick Check Teacher Notes**](#jitteachnote) |
| 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)   + 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), [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.4a](https://www.doe.virginia.gov/home/showpublisheddocument/25380/638045617856370000), [A.6c](https://www.doe.virginia.gov/home/showpublisheddocument/25424/638045619517400000), [8.16b](https://www.doe.virginia.gov/home/showpublisheddocument/25324/638045435991270000), [8.16d](https://www.doe.virginia.gov/home/showpublisheddocument/25332/638045440668500000), [8.17](https://www.doe.virginia.gov/home/showpublisheddocument/25340/638045440689900000), [7.10c](https://www.doe.virginia.gov/home/showpublisheddocument/25180/638045413961200000), [7.12](https://www.doe.virginia.gov/home/showpublisheddocument/25196/638045414008400000) |

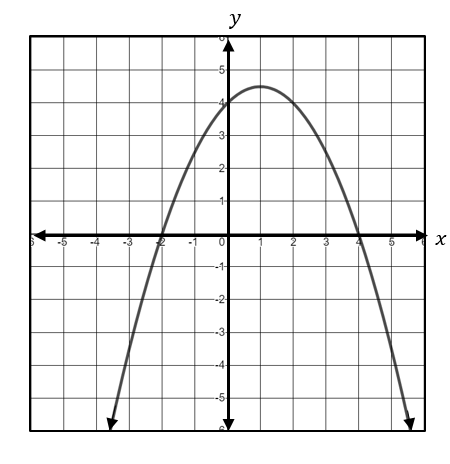
SOL A.7d - Just in Time Quick Check

1. Circle all of the following functions that have an *x*-intercept of 3.

1. Let and . For which value of will the *x*-intercept of be

equivalent to the *x*-intercept of ?

1. Write the *x*- and *y*-intercept of the function each as an ordered pair.
2. Circle the *y*-intercept of the function shown on the graph.



1. Which of the following functions have exactly one *x*-intercept?

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

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

1. Circle all of the following functions that have an *x*-intercept of 3.

*A common error a student may make is to select the functions with a y-intercept of 3, such as f(x) and p(x). This may indicate that a student has difficulty differentiating between an x-intercept and y-intercept using an algebraic approach. A strategy that might be useful is to have a student represent the functions visually and determine which functions have an x-intercept of 3 then make the connection algebraically. Desmos is a powerful tool that can be used to show connections between algebraic forms, graphs, and intercepts.*

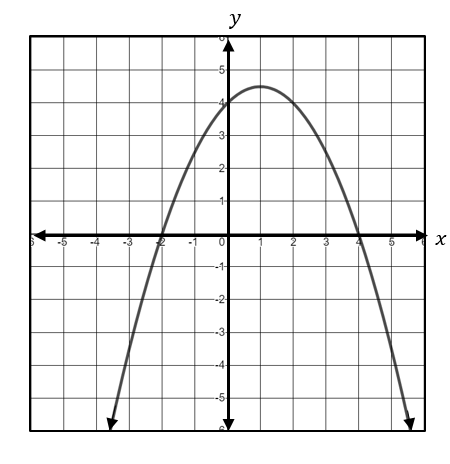
1. Let and . For which value of will the *x*-intercept of be equivalent to the *x*-intercept of ?

*A common error that a student may make is to say that , which is the x-intercept 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.*

1. Write the *x*- and *y*-intercept of the function each as an ordered pair.

*A common error a student may make is to write the x-intercept as (0, ) or the y-intercept as (-4, 0). This may indicate a misunderstanding of representing x- and y-intercepts as ordered pairs. A strategy that might be helpful for students is to verify the intercepts using a graphing utility such as Desmos. In addition, a student might find helpful to use the table feature in Desmos to verify intercepts.*

1. Circle the *y*-intercept of the function shown on the graph.



*A common error a student may make is to circle both the x- and y-intercepts or to circle only the x-intercepts. This may indicate that a student has difficulty distinguishing between x- and y-intercepts and a misunderstanding between intercepts and solutions of a function. A strategy that might be helpful for students is to represent the x- and y-intercepts as a set of ordered pairs or as a table to show the similarities and differences between the coordinates.*

1. Which of the following functions have exactly one *x*-intercept?

*A common error a student may make is to select f(x) as having only one x-intercept because it is written in factored form and appears to have one binomial factor. This may indicate that a student does not recognize that the GCF of 4x is also a factor of the function and constitutes a unique x-intercept. A strategy that might be helpful for students is to verify the intercepts using a graphing utility such as Desmos. In addition, a student might find helpful to use the table feature in Desmos to verify the x-intercepts a function.*