



Exploring Inverse Functions—Teacher Notes

Activity Overview

Students will investigate the fundamental concept of an inverse, generate the inverse graphs of relations applying this concept, and algebraically determine the inverse.

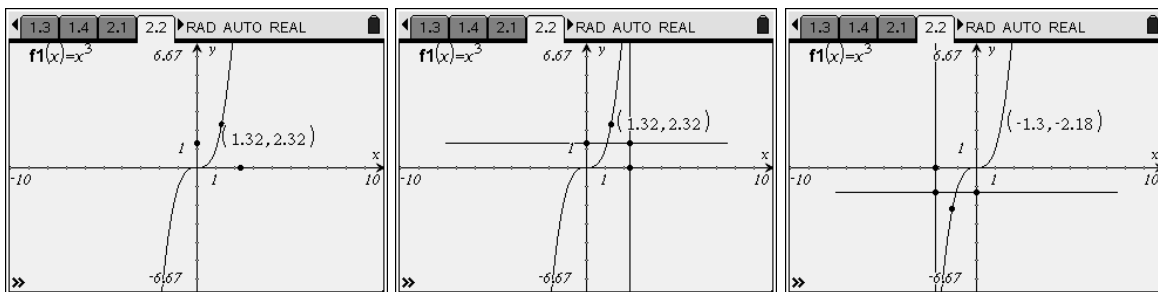
Materials

- *Technology:* TI-Nspire handheld, TI-Nspire CAS handheld, or TI-Nspire CAS computer software
- *Documents:* Inverse_Functions.tns, Inverse_Functions_Student.doc

Student Solutions

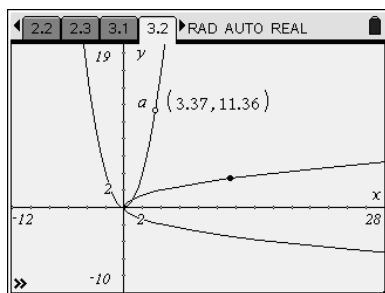
Inverses Point-by-Point

1. $\{(5, 2), (5, -4), (-2, -9), (-3, 0)\}$
2. Point moves like the original function, only flipped about $y = x$.



Inverses as a Graphical Relation

3.
 - a. Moves like the original parabola turned on its side
 - b. Yes
 - c.



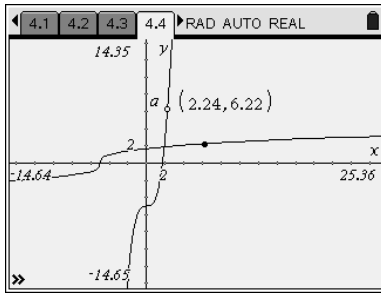
- d. Two halves of $y = \sqrt{x}$ and $y = -\sqrt{x}$ or simply $y^2 = x$

Inverses as Functions

4.
 - a. If there exists a horizontal line that intersects the graph at more than one point, then the inverse relation is not a function.

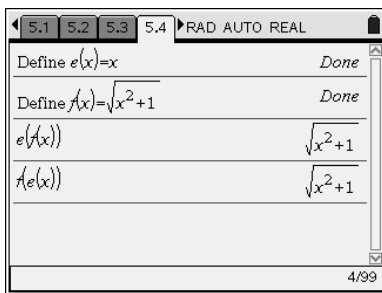


b. It is a function.

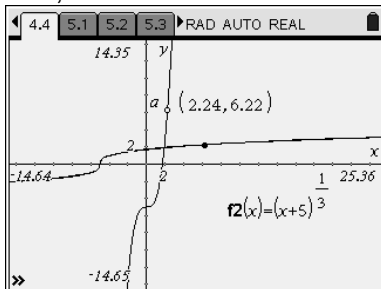


Finding Inverses Algebraically

5.



6. a. Yes, it matches the locus.



b. The composition gives a result of x . This is important because the composition of a function with its inverse should give the identity function (maps x directly back to x).