

SECTION 1.5 ABSOLUTE VALUE AND INVERSE OF QUADRATIC FUNCTIONS

- i) Concept of Absolute and Inverse functions
- ii) Domain and Range of the inverse of a QF
- iii) Graphing the absolute and inverse of a QF

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WHAT IS AN ABSOLUTE VALUE FUNCTION

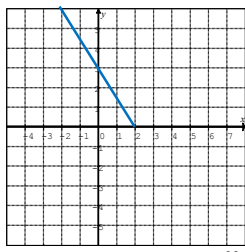
- o The ABS function measures the
- o Since distance is always positive,
- o When graphing the absolute value of a function,
- o If the point already

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GRAPHING AN ABSOLUTE VALUE FUNCTION

- o The ABS function will reflect any part of the function under the x-axis to
- o The ABS of the straight line is a

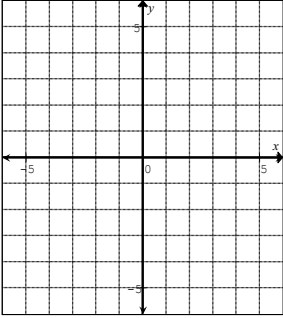


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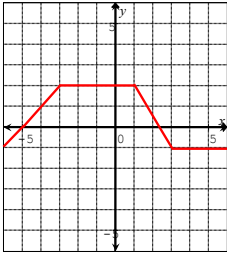
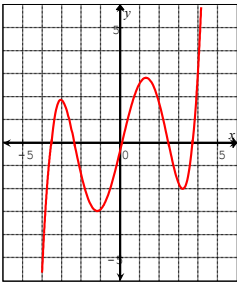
Section 1.5 Absolute Value and Inverse of Quadratic Functions

EX: GIVEN THE FOLLOWING PARABOLA, GRAPH THE ABSOLUTE VALUE OF THIS FUNCTION:



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PRACTICE: GIVEN THE FOLLOWING GRAPHS, DRAW THE ABSOLUTE VALUE OF EACH FUNCTION:



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INVERSE FUNCTIONS $y = f^{-1}(x)$

- The inverse of a function will switch
- ie: Given the function, find its inverse: $y = 3x - 5$

- Graphically, the inverse of a function is
- Switch the "x" and "y" coordinates to

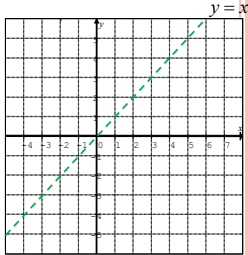
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Section 1.5 Absolute Value and Inverse of Quadratic Functions

EX: GIVEN THE GRAPH OF $y = 3x - 5$, GRAPH THE INVERSE FUNCTION $y = f^{-1}(x)$

$y = 3x - 5$

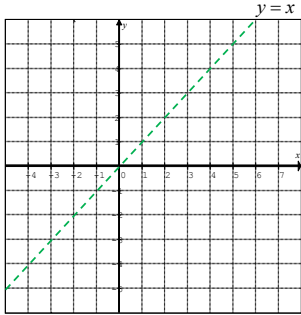
x	y
0	
1	
2	
3	
4	
-1	



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PRACTICE: FIND THE INVERSE OF THE FOLLOWING FUNCTION AND GRAPH IT.

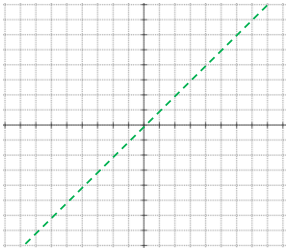
$y = -\frac{3}{2}x + 6$



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THE INVERSE OF A QUADRATIC FUNCTION

- The inverse of a QF is not a function because it
- So we must split the QF to two



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FIND THE INVERSE OF THE FOLLOWING FUNCTION:

$$y = 2(x - 3)^2 + 1$$

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DOMAIN & RANGE OF THE INVERSE FUNCTION:

- Since we switch the x and y variables for the inverse, the domain of
- Make sure you know
- Likewise, the range of $f(x)$

$$y = f(x) \qquad \qquad \qquad y = f^{-1}(x)$$

Domain : →
 Domain : →
 Range : →
 Range : →

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EX: FIND THE DOMAIN AND RANGE OF THE INVERSE FUNCTION

i) $f(x) = 2(x - 3)^2 + 1 ; x \geq 3$

$f(x) = 2(x - 3)^2 + 1$ →
 Domain : Domain :
 Range : Range :

ii) $f(x) = -3(x + 4)^2 - 5$

$f(x) = -3(x + 4)^2 - 5$ →
 Domain : Domain :
 Range : Range :

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Section 1.5 Absolute Value and Inverse of Quadratic Functions

PRACTICE: FIND THE INVERSE FUNCTION AND ITS DOMAIN AND RANGE: $y = -\frac{1}{2}(x+3)^2 - 3; x < -3$

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GIVEN THE FUNCTION, FIND EACH OF THE FOLLOWING VALUES

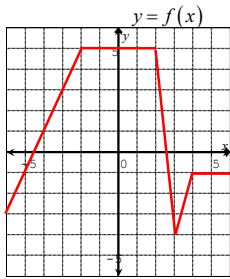
i) $f(-2)$

ii) $|f(-6)|$

iii) $f^{-1}(-4)$

iv) $|f^{-1}(5)|$

v) $f^{-1}(|-3|)$



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