

Graphing Quadratics stations handouts

Station # _____

Equation

Station # _____

Equation

Characteristics

Domain?

Range?

Vertex?

Is the vertex a maximum or minimum point?

Axis of symmetry?

Intervals of increasing?

Intervals of decreasing?

x -intercepts (zeros)?

y -intercepts?

End behavior?

Odd, even, or neither?

Characteristics

Domain?

Range?

Vertex?

Is the vertex a maximum or minimum point?

Axis of symmetry?

Intervals of increasing?

Intervals of decreasing?

x -intercepts (zeros)?

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End behavior?

Odd, even, or neither?

Station # _____

Equation

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x -intercepts (zeros)?

y -intercepts?

End behavior?

Odd, even, or neither?

Transformations of $f(x)$

$g(x)$

$h(x)$

$q(x)$

$r(x)$

Station 1

$$f(x) = x^2$$

Step 1: Find $f(x)$.

x	$f(x)$
-2	
-1	
0	
1	
2	

Step 2:
Plot the coordinates
using the pegs.

Step 3:
Connect the pegs
using brown yarn.

Station 1

$$f(x) = x^2$$

Step 1: Find $f(x)$.

x	$f(x)$
-2	4
-1	1
0	0
1	1
2	4

Step 2:

Plot the coordinates
using the pegs.

Step 3:

Connect the pegs
using brown yarn.

Characteristics of $f(x)$

Domain?

Range?

Vertex?

Is the vertex a maximum or minimum point?

Axis of symmetry?

Intervals of increasing?

Intervals of decreasing?

x -intercepts (zeros)?

y -intercepts?

End behavior?

Odd, even, or neither?

Characteristics of $f(x)$

Domain?

$(-\infty, \infty)$

Range?

$[0, \infty)$

Vertex?

$(0, 0)$

Is the vertex a maximum or minimum point?

minimum

Axis of symmetry?

$x = 0$

Intervals of increasing?

$[0, \infty)$

Intervals of decreasing?

$(-\infty, 0]$

x -intercepts (zeros)?

$(0, 0)$

y -intercepts?

$(0, 0)$

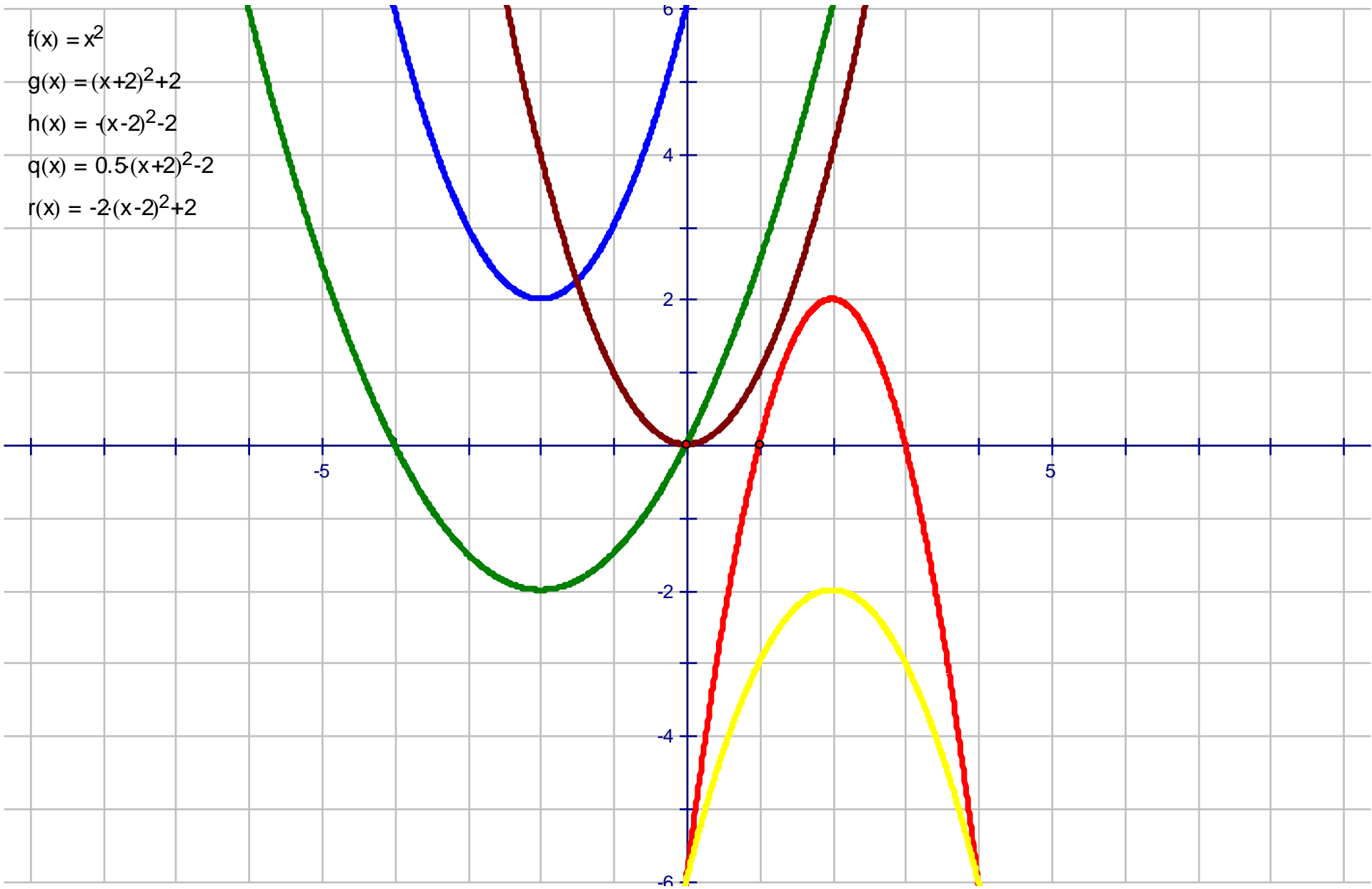
End behavior?

Rises on the left & right

Odd, even, or neither?

even

$f(x) = x^2$
 $g(x) = (x+2)^2 + 2$
 $h(x) = -(x-2)^2 - 2$
 $q(x) = 0.5(x+2)^2 - 2$
 $r(x) = -2(x-2)^2 + 2$



Station 2

$$g(x) = (x + 2)^2 + 2$$

Step 1: Find $g(x)$.

x	$g(x)$
0	
-1	
-2	
-3	
-4	

Step 2:
Plot the coordinates
using the pegs.

Step 3:
Connect the pegs
using blue yarn.

Station 2

$$g(x) = (x + 2)^2 + 2$$

Step 1: Find $g(x)$.

x	$g(x)$
0	6
-1	3
-2	2
-3	3
-4	6

Step 2:

Plot the coordinates
using the pegs.

Step 3:

Connect the pegs
using blue yarn.

Characteristics of $g(x)$

Domain?

Range?

Vertex?

Is the vertex a maximum or minimum point?

Axis of symmetry?

Intervals of increasing?

Intervals of decreasing?

x -intercepts (zeros)?

y -intercepts?

End behavior?

Odd, even, or neither?

Characteristics of $g(x)$

Domain?

$(-\infty, \infty)$

Range?

$[2, \infty)$

Vertex?

$(-2, 2)$

Is the vertex a maximum or minimum point?

minimum

Axis of symmetry?

$x = -2$

Intervals of increasing?

$[-2, \infty)$

Intervals of decreasing?

$(-\infty, -2]$

x -intercepts (zeros)?

none

y -intercepts?

$(0, 6)$

End behavior?

Rises on the left & right

Odd, even, or neither?

neither

Station 3

$$h(x) = -(x - 2)^2 - 2$$

Step 1: Find $h(x)$.

x	$h(x)$
0	
1	
2	
3	
4	

Step 2:
Plot the coordinates
using the pegs.

Step 3:
Connect the pegs
using yellow yarn.

Station 3

$$h(x) = -(x - 2)^2 - 2$$

Step 1: Find $h(x)$.

x	$h(x)$
0	-6
1	-3
2	-2
3	-3
4	-6

Step 2:

Plot the coordinates
using the pegs.

Step 3:

Connect the pegs
using yellow yarn.

Characteristics of $h(x)$

Domain?

Range?

Vertex?

Is the vertex a maximum or minimum point?

Axis of symmetry?

Intervals of increasing?

Intervals of decreasing?

x -intercepts (zeros)?

y -intercepts?

End behavior?

Odd, even, or neither?

Characteristics of $h(x)$

Domain?

$(-\infty, \infty)$

Range?

$(-\infty, -2]$

Vertex?

$(2, -2)$

Is the vertex a maximum or minimum point?

maximum

Axis of symmetry?

$x = 2$

Intervals of increasing?

$(-\infty, 2]$

Intervals of decreasing?

$[2, \infty)$

x -intercepts (zeros)?

none

y -intercepts?

$(0, -6)$

End behavior?

falls on the left & right

Odd, even, or neither?

neither

Station 4

$$q(x) = \frac{1}{2}(x + 2)^2 - 2$$

Step 1: Find $q(x)$.

x	$q(x)$
2	
0	
-2	
-4	
-6	

Step 2:

Plot the coordinates
using the pegs.

Step 3:

Connect the pegs
using green yarn.

Station 4

$$q(x) = \frac{1}{2}(x + 2)^2 - 2$$

Step 1: Find $q(x)$.

x	$q(x)$
2	6
0	0
-2	-2
-4	0
-6	6

Step 2:

Plot the coordinates
using the pegs.

Step 3:

Connect the pegs
using green yarn.

Characteristics of $q(x)$

Domain?

Range?

Vertex?

Is the vertex a maximum or minimum point?

Axis of symmetry?

Intervals of increasing?

Intervals of decreasing?

x -intercepts (zeros)?

y -intercepts?

End behavior?

Odd, even, or neither?

Characteristics of $q(x)$

Domain?

$(-\infty, \infty)$

Range?

$[-2, \infty)$

Vertex?

$(-2, -2)$

Is the vertex a maximum or minimum point?

minimum

Axis of symmetry?

$x = -2$

Intervals of increasing?

$[-2, \infty)$

Intervals of decreasing?

$(-\infty, -2]$

x -intercepts (zeros)?

$(0, 0)$ & $(-4, 0)$

y -intercepts?

$(0, 0)$

End behavior?

Rises on the left & right

Odd, even, or neither?

neither

Station 5

$$r(x) = -2(x - 2)^2 + 2$$

Step 1: Find $r(x)$.

x	$r(x)$
0	
1	
2	
3	
4	

Step 2:
Plot the coordinates
using the pegs.

Step 3:
Connect the pegs
using red yarn.

Station 5

$$r(x) = -2(x - 2)^2 + 2$$

Step 1: Find $r(x)$.

x	$r(x)$
0	-6
1	0
2	2
3	0
4	-6

Step 2:

Plot the coordinates
using the pegs.

Step 3:

Connect the pegs
using red yarn.

Characteristics of $r(x)$

Domain?

Range?

Vertex?

Is the vertex a maximum or minimum point?

Axis of symmetry?

Intervals of increasing?

Intervals of decreasing?

x -intercepts (zeros)?

y -intercepts?

End behavior?

Odd, even, or neither?

Characteristics of $r(x)$

Domain?

$(-\infty, \infty)$

Range?

$(-\infty, 2]$

Vertex?

$(2, 2)$

Is the vertex a maximum or minimum point?

maximum

Axis of symmetry?

$x = 2$

Intervals of increasing?

$(-\infty, 2]$

Intervals of decreasing?

$[2, \infty)$

x -intercepts (zeros)?

none

y -intercepts?

$(0, -6)$

End behavior?

falls on the left & right

Odd, even, or neither?

neither

Transformations of $f(x)$

$g(x)$

$h(x)$

$q(x)$

$r(x)$



Transformations of $f(x)$

$g(x)$

$$g(x) = (x + 2)^2 + 2$$

$h(x)$

$$h(x) = -(x - 2)^2 - 2$$

$q(x)$

$$q(x) = \frac{1}{2}(x + 2)^2 - 2$$

$r(x)$

$$r(x) = -2(x - 2)^2 + 2$$

Transformations of $f(x)$

$g(x)$	Horizontal shift $\leftarrow 2$ units Vertical shift $\uparrow 2$ units
$h(x)$	Horizontal shift $\rightarrow 2$ units Vertical shift $\downarrow 2$ units Reflection across the x-axis
$q(x)$	Horizontal shift $\leftarrow 2$ units Vertical shift $\downarrow 2$ units Vertical compression by a factor of $\frac{1}{2}$
$r(x)$	Horizontal shift $\rightarrow 2$ units Vertical shift $\uparrow 2$ units Vertical stretch by a factor of 2 Reflection across the x-axis