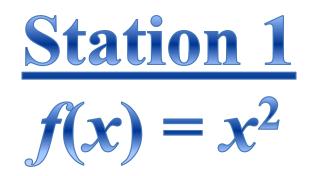
Graphing Quadratics stations handouts

Station #	Station #	
Equation	Equation	
Characteristics	Characteristics	
Domain?	Domain?	
Range?	Range?	
Vertex?	Vertex?	
Is the vertex a maximum or minimum point?	Is the vertex a maximum or minimum point?	
Axis of symmetry?	Axis of symmetry?	
Intervals of increasing?	Intervals of increasing?	
Intervals of decreasing?	Intervals of decreasing?	
x-intercepts (zeros)?	x-intercepts (zeros)?	
y-intercepts?	y-intercepts?	
End behavior?	End behavior?	
Odd, even, or neither?	Odd, even, or neither?	

Station #	Transformations of $f(x)$
Equation	Transformations of $f(x)$
	g(x)
Characteristics	
Domain?	
Range?	$\int h(x) $
Vertex?	
Is the vertex a maximum or minimum point?	
Axis of symmetry?	
Intervals of increasing?	q(x)
Intervals of decreasing?	
x-intercepts (zeros)?	
y-intercepts?	$ \left \begin{array}{c c} r(x) \end{array} \right $
End behavior?	
Odd, even, or neither?	

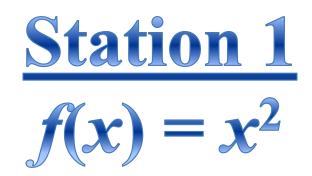


Step 1: Find f(x).

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

Step 2: Plot the coordinates using the pegs.

Step 3: Connect the pegs using brown yarn.



Step 1: Find f(x).

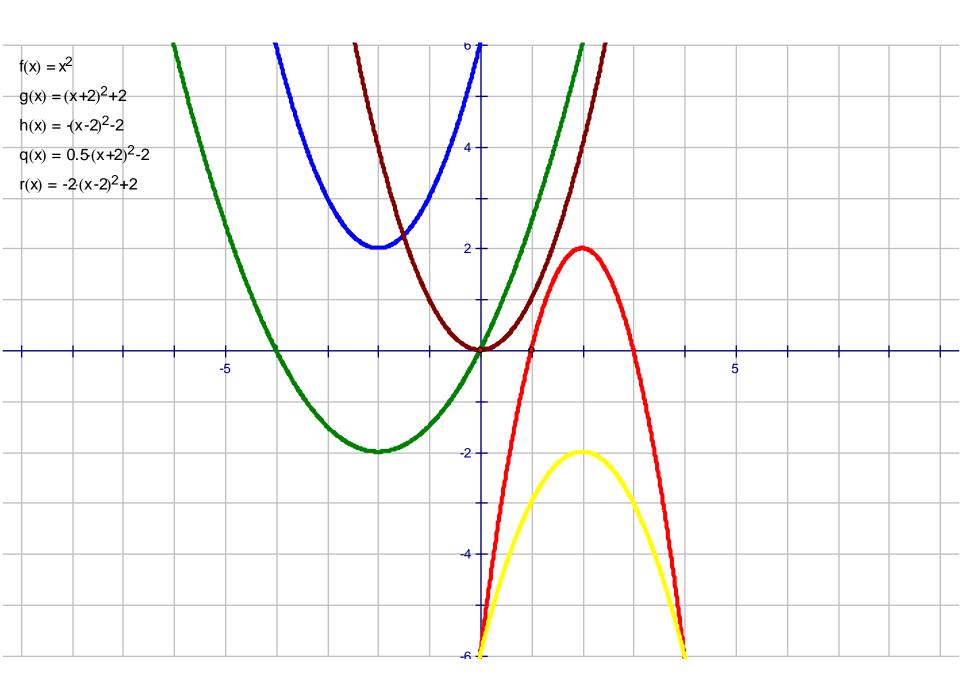
X	f(x)
-2	4
-1	1
0	0
1	1
2	4

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?	
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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	
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$\frac{\text{Station 2}}{g(x) = (x+2)^2 + 2}$

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.

$\frac{\text{Station 2}}{g(x) = (x+2)^2 + 2}$

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?		
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Characteristics of $g(x)$		
Domain?	(=00,00)	
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	

$\frac{\text{Station 3}}{h(x) = -(x-2)^2 - 2}$

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.

$\frac{\text{Station 3}}{h(x) = -(x-2)^2 - 2}$

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?	
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Characteristics of $h(x)$	
Domain?	(=00,00)
Range?	(-00, -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.

$$\frac{\text{Station 4}}{g(x) = \frac{1}{2}(x+2)^2 - 2}$$

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?	
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Characteristics of $q(x)$	
Domain?	(=00,00)
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	(-4,0)
y-intercepts?	(0,0)
End behavior? Rises	on the left & right
Odd, even, or neither?	neither
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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.

$$\frac{\text{Station 5}}{r(x) = -2(x-2)^2 + 2}$$

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?	
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Characteristics of $r(x)$	
Domain?	$(=\infty,\infty)$
Range?	(=co, 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)

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Transformations of f(x)

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

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

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

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

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Transformations of f(x)

g(x)	Horizontal shift ←2 units Vertical shift ↑ 2 units
	Horizontal shift $\rightarrow 2$ units
h(x)	Vertical shift ↓ 2 units
	Reflection across the x-axis
	Horizontal shift ←2 units
q(x)	Vertical shift ↓ 2 units
• • •	Vertical compression by a factor of 1/2
	Horizontal shift →2 units
70(20)	Vertical shift † 2 units
r(x)	Vertical stretch by a factor of 2
	Reflection across the x-axis
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