

Sorting Functions

T1

On the next page are four graphs, four equations, four tables, and four rules.

Your task is to match each graph with an equation, a table and a rule.

1. Write your answers in the following table.

Graph	Equation	Table	Rule
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B	D	A	C
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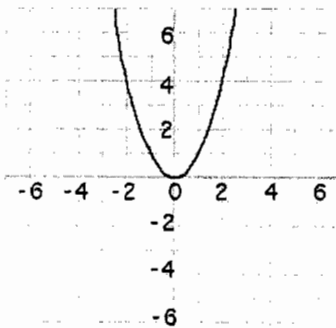
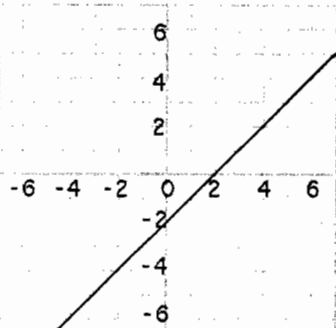
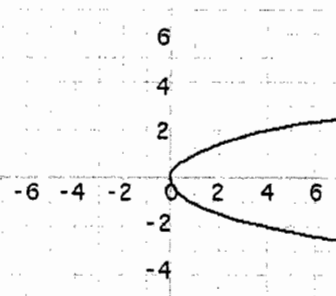
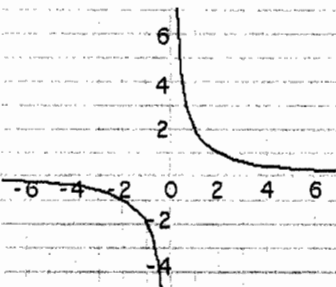
2. Explain how you matched each of the four graphs to its equation.

Graph A Graph A isn't a linear equation since it isn't a straight line, so there must be a squared in the equation. I took (2,4) and found the relationship between the x & y $\Rightarrow y = x^2$.

Graph B Graph B, a straight line, is a linear equation. $y = x - 2$ is the only linear equation in the choices.

Graph C Graph C is sideways, so it fits equation B. $y^2 = x$ is the same as $y = \sqrt{x}$. Since x can't be a negative # (there's no $\sqrt{\quad}$ of a negative number), the maximum x point is 0, as shown in

Graph D Graph D has 2 separate lines which fits equation ^{the graph} A, since the negatives will stay in the all negative quadrant and the positives will stay in the all positive quadrant.

<p>Graph A</p> 	<p>Equation A</p> $xy = 2$	<p>Table A</p> <table border="1" data-bbox="779 378 1120 483"> <tbody> <tr> <td>x</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>y</td> <td>-4</td> <td>-3</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> </tr> </tbody> </table>	x	-2	-1	0	1	2	3	y	-4	-3	-2	-1	0	1	<p>Rule A</p> <p>y is the same as x multiplied by x</p>
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Your task is to match each graph with an equation, a table and a rule.

1. Write your answers in the following table.

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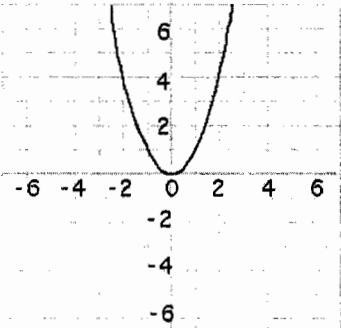
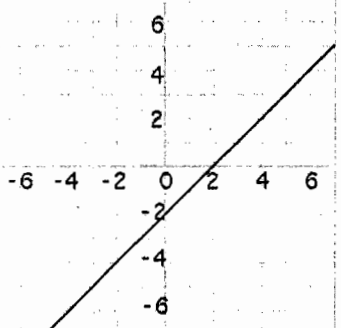
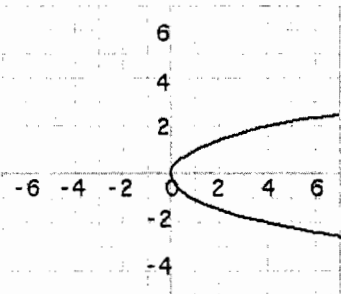
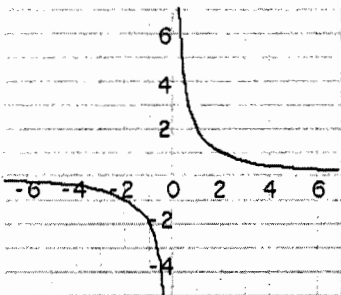
Graph A This graph showed that for each y-value, there were 2 x-values.

The equation was C because you could put a +/- number of x, but the y-value would be the same

Graph B This graph was linear, so there was only one possible solution whatever number you plug in. The y-intercept was -2. Equation matched the requirements.

Graph C This graph showed that for each x-value, there could be two y-values. The equation was B since, like equation C, it is quadratic, matching the quadratic graph

Graph D This graph was equation A, since A was the only one left.

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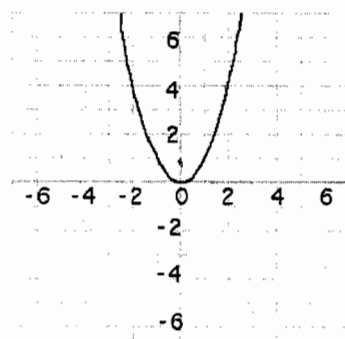
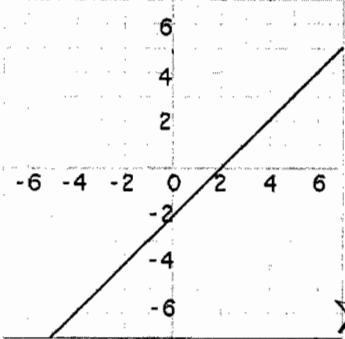
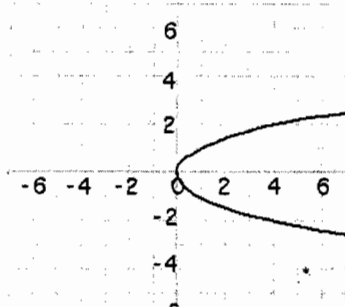
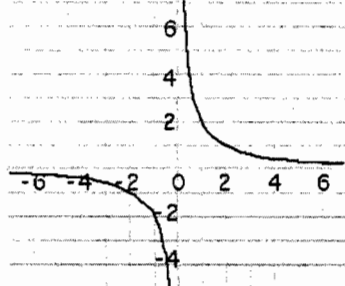
2. Explain how you matched each of the four graphs to its equation.

Graph A I know that it matches the equation because $y = x^2$ means the y can't be negative. Also multiplying x^2 , there can be 2 possible answers a negative and positive.

Graph B I know in the equation of $y = x - 2$, the -2 represents the y-intercept. And in the graph the line intersects -2 at the y axis.

Graph C This graph is like graph A but sideways so I knew the equations would flipped ($y = x^2$) \rightarrow ($y^2 = x$)

Graph D I know because if I make the x or y = 0 in the equation $xy = 2$, it won't be possible and Graph D is the only one that shows that.

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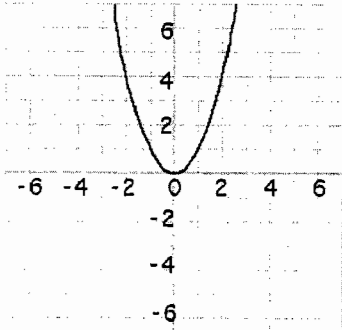
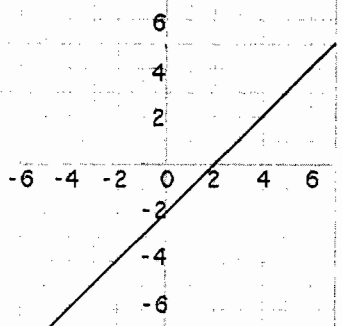
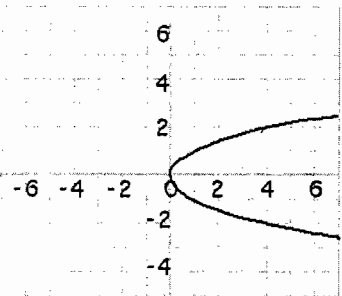
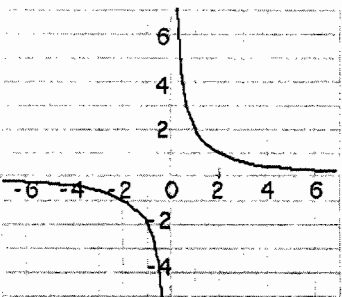
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Graph A I found $(2, 4)$ on the graph and
since $4 = 2^2$, the equation is $y = x^2$

Graph B I found $(-2, -4)$ on the graph and
since $-4 = -2 \cdot 2$, the equation is $y = x - 2$

Graph C I found $(4, 2)$ and $(4, -2)$ and since
 $4 = 2^2$ or $(-2)^2$, the equation is $y^2 = x$

Graph D

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Graph A I already knew this graph to be $y=x^2$, from my algebra class, but just to be certain I plugged some points on the line into $y=x^2$. $(2,4) \rightarrow 4=2^2 \rightarrow 4=4 \checkmark$ $(-1,1) \rightarrow 1=(-1)^2 \rightarrow 1=1 \checkmark$ These points worked, so I wrote down equation C

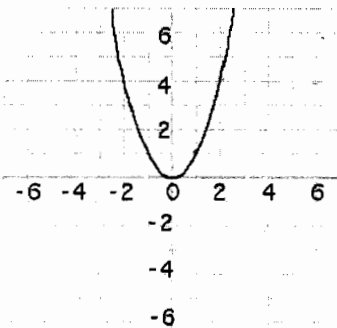
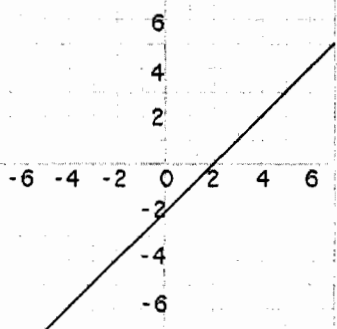
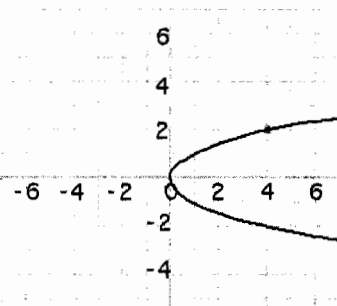
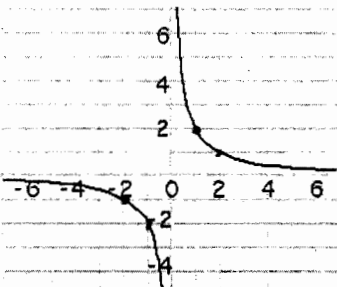
Graph B this graph was a linear equation, with a slope of 1 and a y-intercept of -2, so, using the standard equation $y=mx+rb \rightarrow y=x-2$, I found the equation for the graph. this equation matched equation D, so I wrote D down.

Graph C I figured the equation for this graph would be somewhat reverse of the equation for Graph A, since the shape was like that of a quadratic, but rotated 90°.

$y^2=x$ seemed to fit that, and I also plugged some points on Graph C into $y^2=x$. $(4,-2) \rightarrow (-2)^2=4 \rightarrow 4=4 \checkmark$ $(1,1) \rightarrow 1^2=1 \rightarrow 1=1 \checkmark$ The points worked, so I wrote equation B down.

Graph D Even though I was unfamiliar with the shape of Graph D, equation A was the only equation left to match with a graph, so therefore Graph D and equation

A must go together. I also plugged in points from graph D into $xy=2$ $(2,1) \rightarrow 2(1)=2 \rightarrow 2=2 \checkmark$ $(-1,2) \rightarrow (-1)(2)=-2 \rightarrow -2 \neq 2 \checkmark$ These points worked, so I wrote equation A down.

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y	4	1	0	1	4	9											
<p>Graph C</p> 	<p>Equation C</p> $y = x^2$	<p>Table C</p> <table border="1" data-bbox="820 1186 1112 1291"> <tbody> <tr> <td>x</td> <td>0</td> <td>1</td> <td>4</td> <td>9</td> <td>16</td> </tr> <tr> <td>y</td> <td>0</td> <td>±1</td> <td>±2</td> <td>±3</td> <td>±4</td> </tr> </tbody> </table>	x	0	1	4	9	16	y	0	±1	±2	±3	±4	<p>Rule C</p> <p>y is 2 less than x</p>		
x	0	1	4	9	16												
y	0	±1	±2	±3	±4												
<p>Graph D</p> 	<p>Equation D</p> $y = x - 2$	<p>Table D</p> <table border="1" data-bbox="795 1596 1128 1701"> <tbody> <tr> <td>x</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>4</td> </tr> <tr> <td>y</td> <td>-1</td> <td>-2</td> <td>±∞</td> <td>2</td> <td>1</td> <td>0.5</td> </tr> </tbody> </table>	x	-2	-1	0	1	2	4	y	-1	-2	±∞	2	1	0.5	<p>Rule D</p> <p>x is the same as y multiplied by y</p>
x	-2	-1	0	1	2	4											
y	-1	-2	±∞	2	1	0.5											