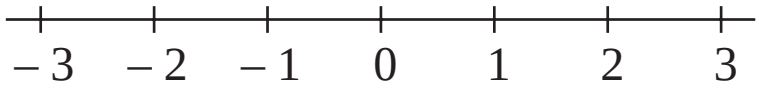
UNIT 13 *Graphs, Equations and Inequalities* Overhead Slides

Overhead Slides

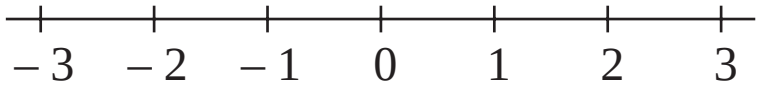
OS 13.1 *Inequalities*

Illustrate each of these inequalities on a number line:

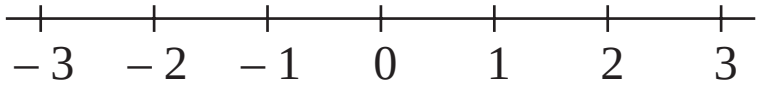
A $x \geq 2$



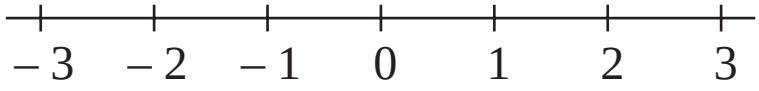
B $x < 3$



C $-2 \leq x < -1$



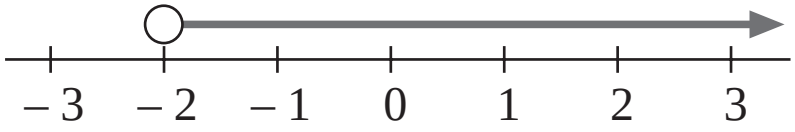
D $-3 < x \leq 2$



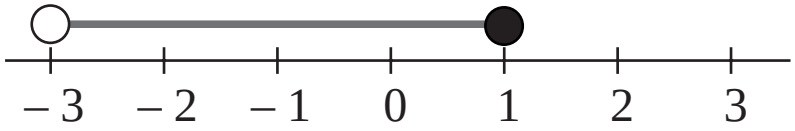
OS 13.2 *Finding Inequalities*

Write down the inequality illustrated in each diagram:

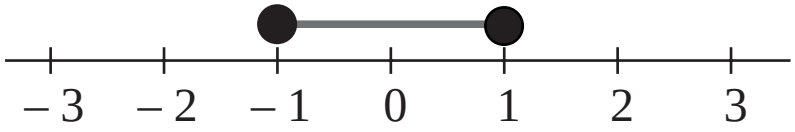
A



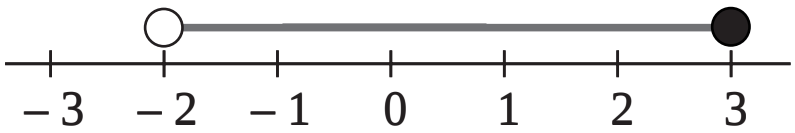
B



C



D

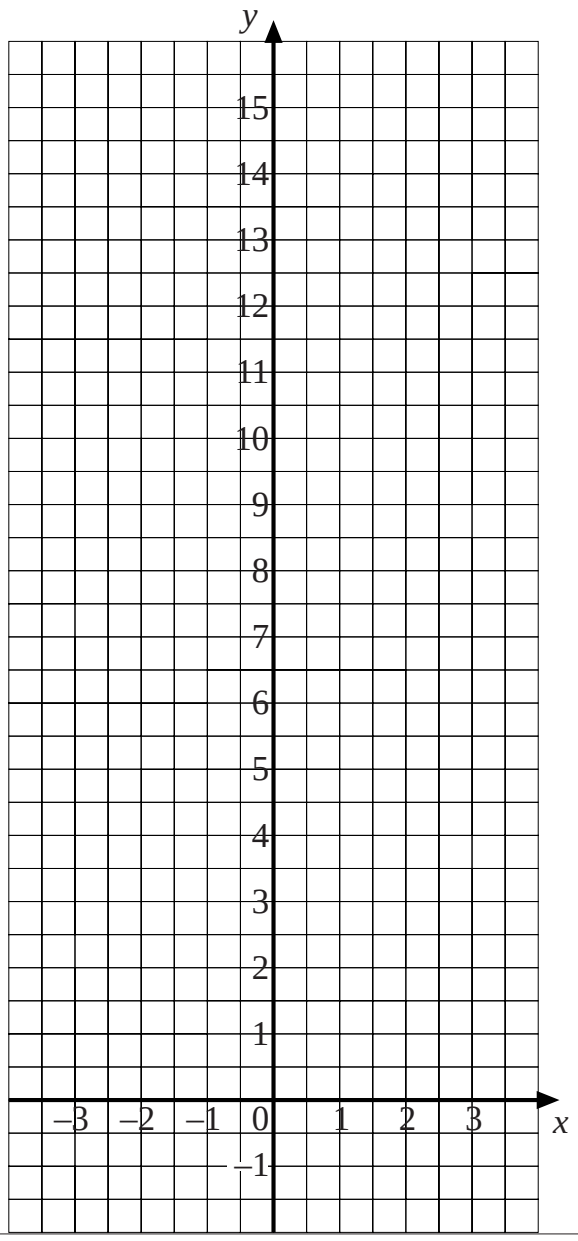


OS 13.3 *Quadratic Functions*

Complete the table:

x	-3	-2	-1	0	1	2	3
x^2							
$x^2 - 2x$							

Draw the graphs $y = x^2$ and $y = x^2 - 2x$.



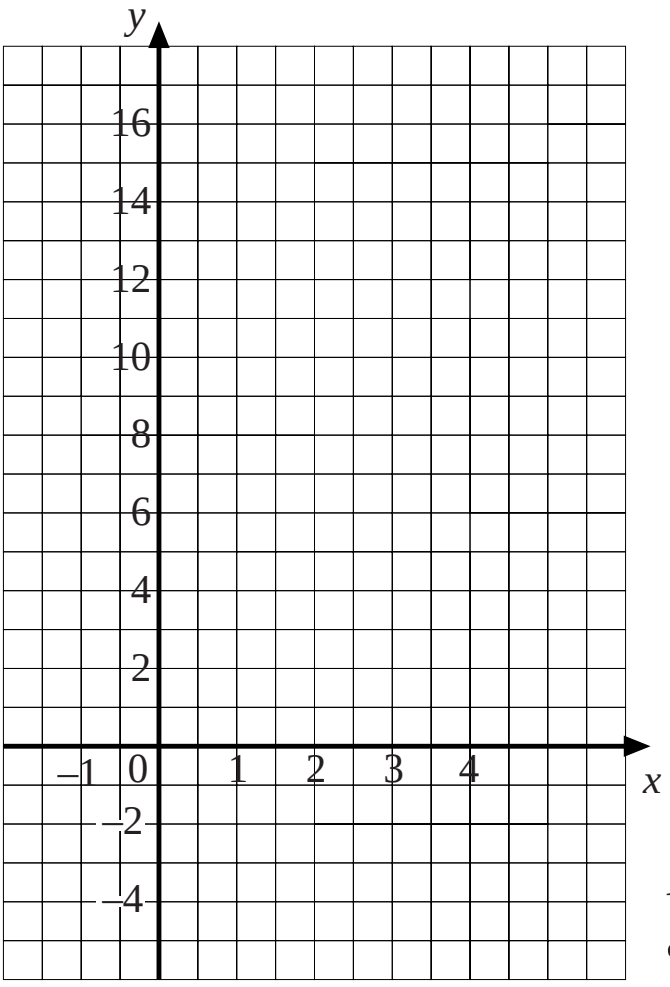
Describe the relationship between the two curves.

OS 13.4 *Cubic Functions*

Complete the table:

x	-1	0	1	2	3	4
$x^3 - 3x^2$						

Draw the graph of $y = x^3 - 3x^2$.



Also draw the line $y = -2$ and write down the solutions of the equation

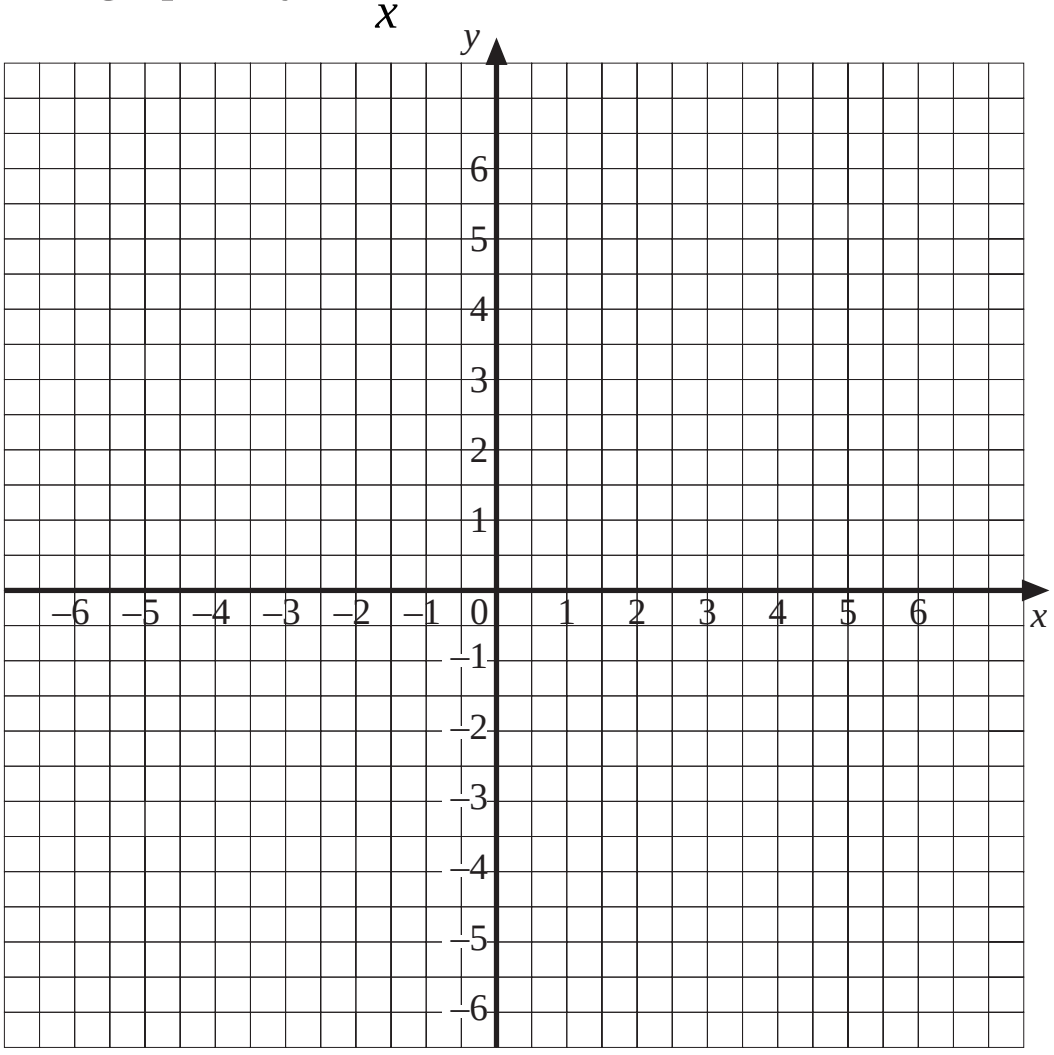
$$x^3 - 3x^2 = -2$$

OS 13.5 *Reciprocal Functions*

Complete the table:

x	-6	-3	-2	-1	0	1	2	3	6
$\frac{6}{x}$									

Draw the graph of $y = \frac{6}{x}$.



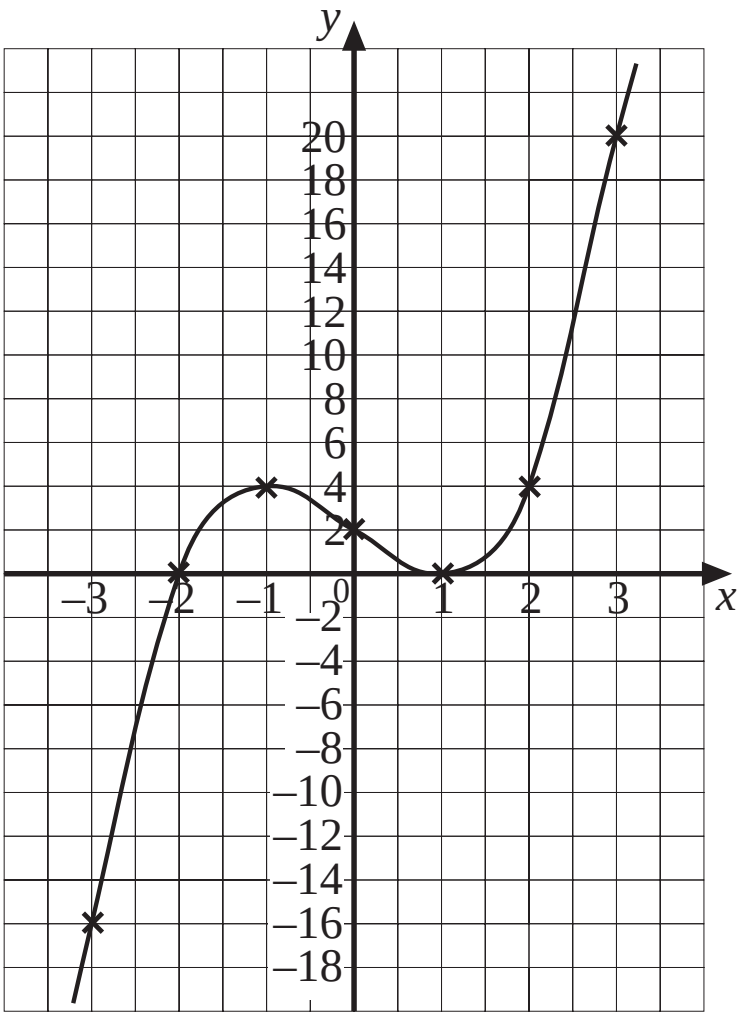
Also draw the line $y = x$ and find approximate solutions for the equation $\frac{6}{x} = x$.

OS 13.6 *Non-Linear Equations*

The graph of

$y = x^3 - 3x + 2$

is shown.



Use the graph to estimate the solutions to the following equations:

$$x^3 - 3x + 2 = 4$$

$$x^3 - 3x + 12 = 2$$

$$x^3 - 3x + 2 = -6$$

OS 13.7 *Iterative Method*

The equation $x^3 + x = 8$ has a solution close to $x = 2$.

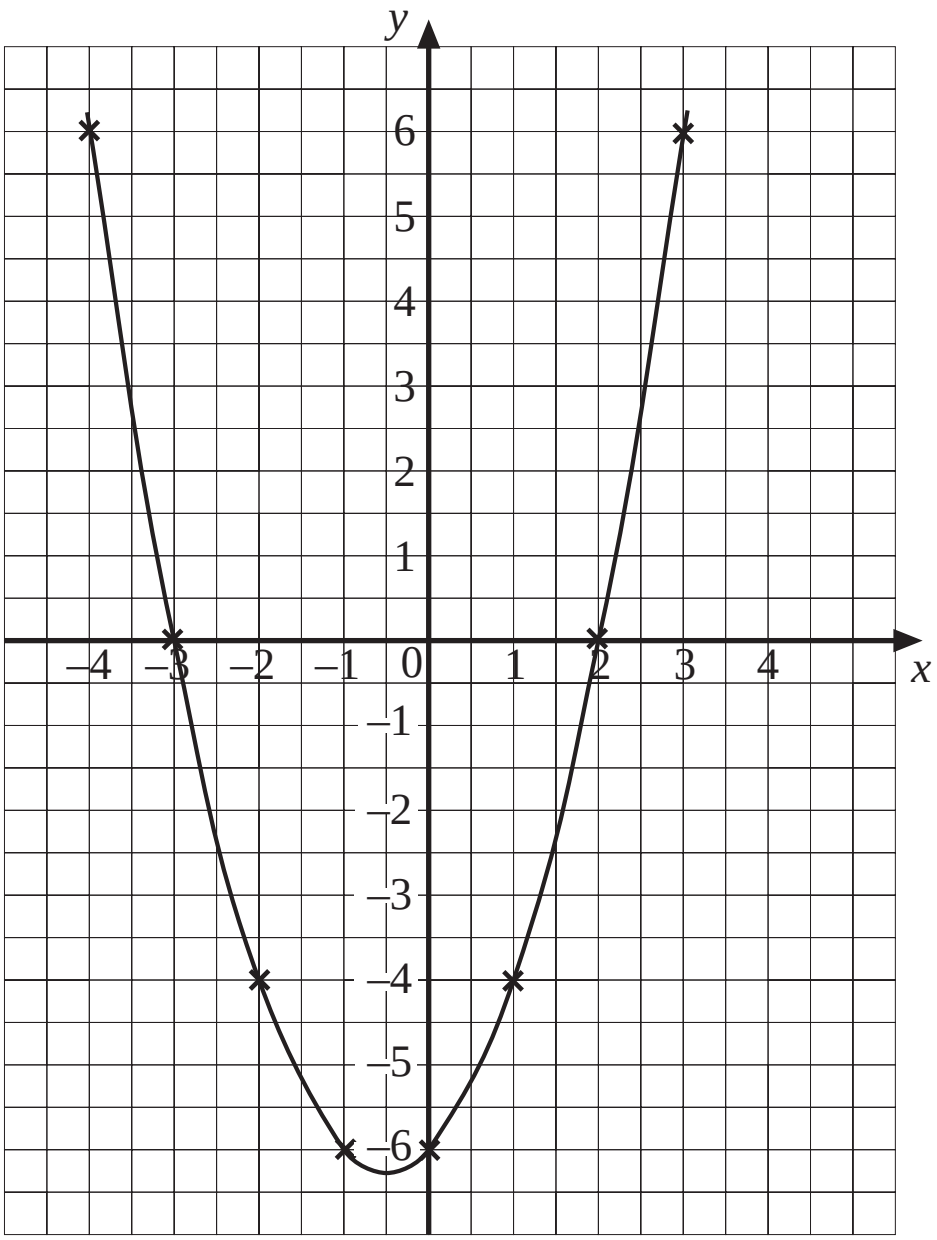
Complete the table and find x correct to 2 decimal places.

Trial x	$x^3 + x$	*Comment*
2		
1.9		
1.8		
1.85		
1.84		
1.83		
1.835		

$x =$ ☐ to 2 decimal palces.

OS 13.8 *Quadratic Inequalities 1*

The diagram shows the graph of $y = x^2 + x - 6$

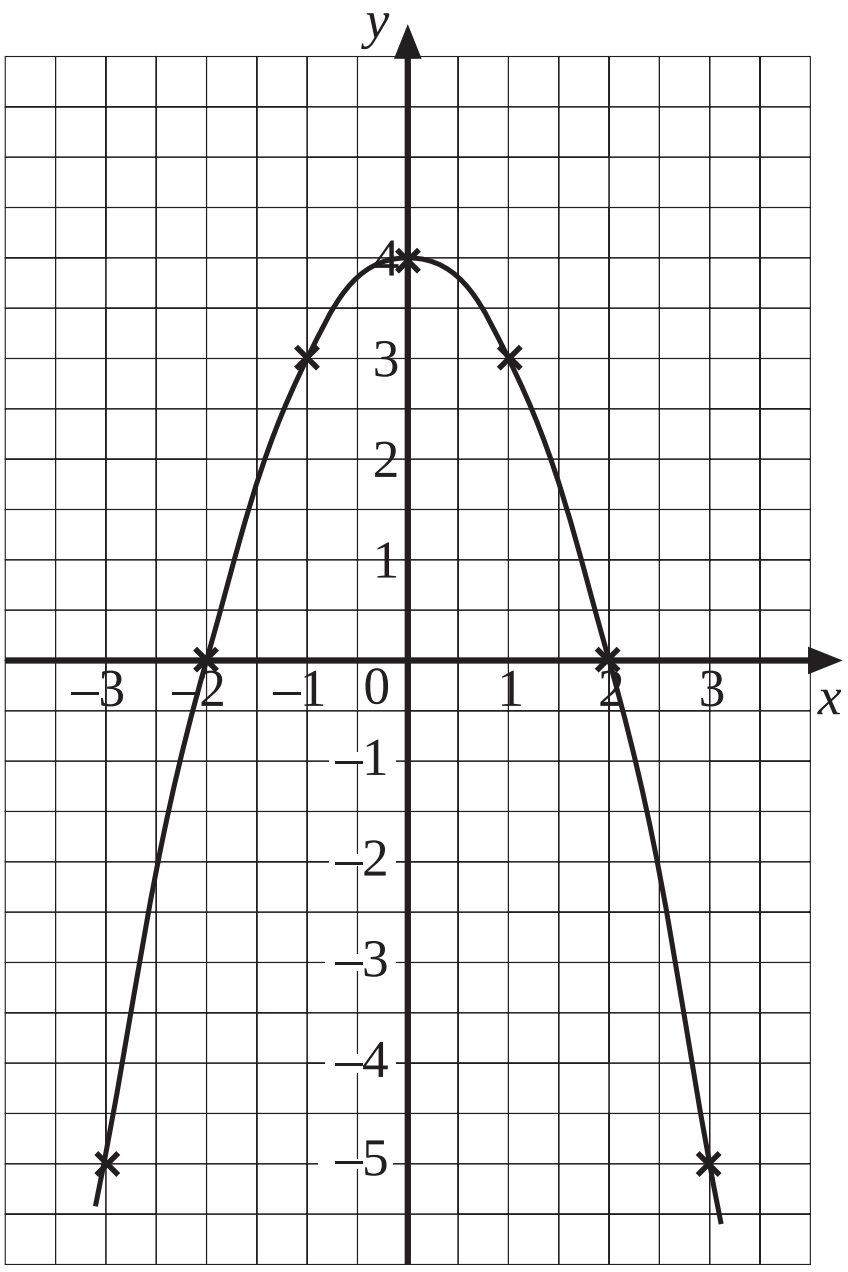


Use the graph to solve these inequalities:

$x^2 + x - 6 < 0$ $x^2 + x - 6 \geq 0$

OS 13.9 *Quadratic Inequalities 2*

The diagram shows the graph of $y = 4 - x^2$.

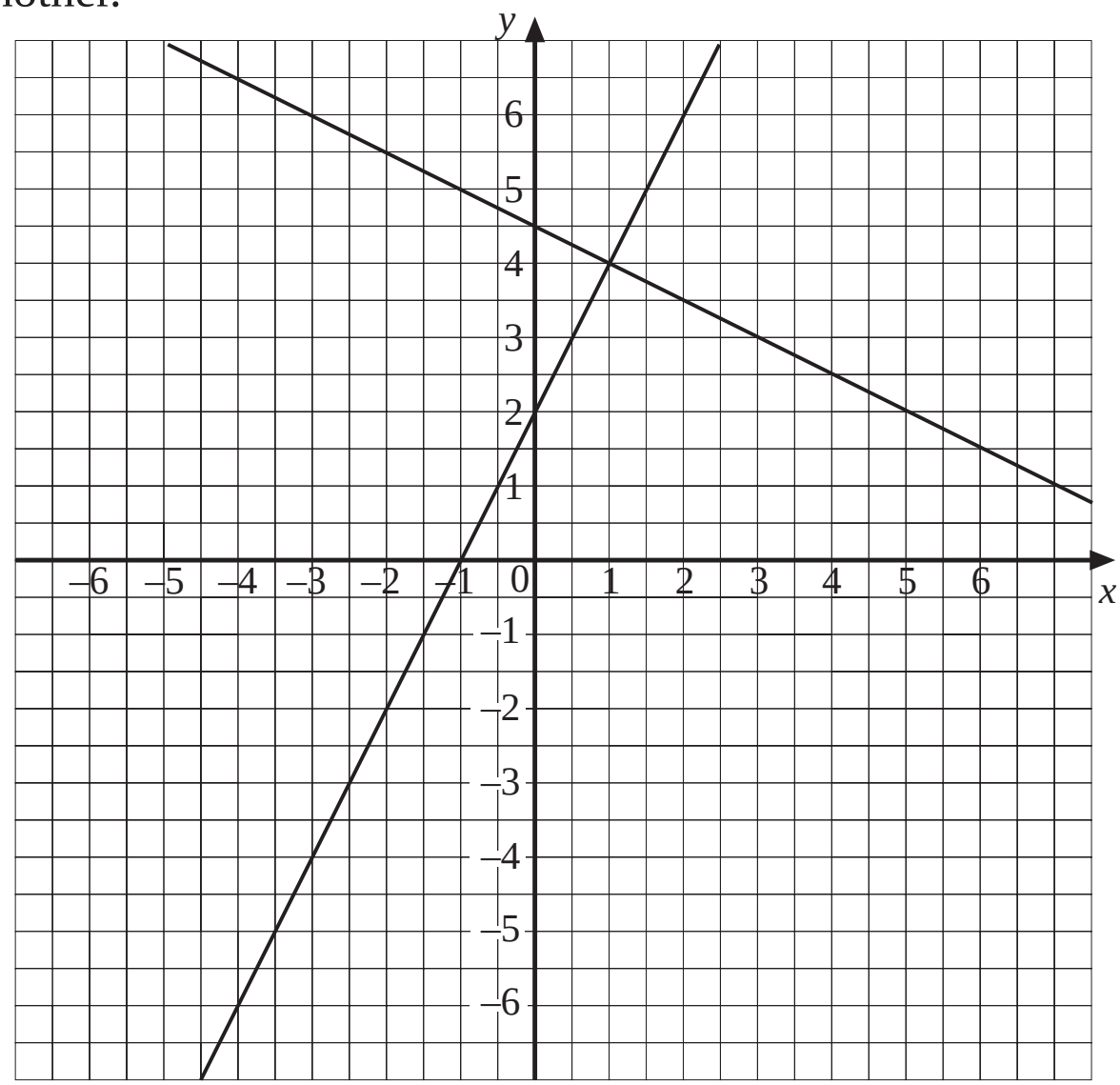


Use the graph to solve these inequalities:

$4 - x^2 \geq 0$ $3 - x^2 \leq 0$

OS 13.10 *Perpendicular Lines*

The graph shows two lines that are perpendicular to one another.



Determine the equation of each line.

How do the gradients compare?