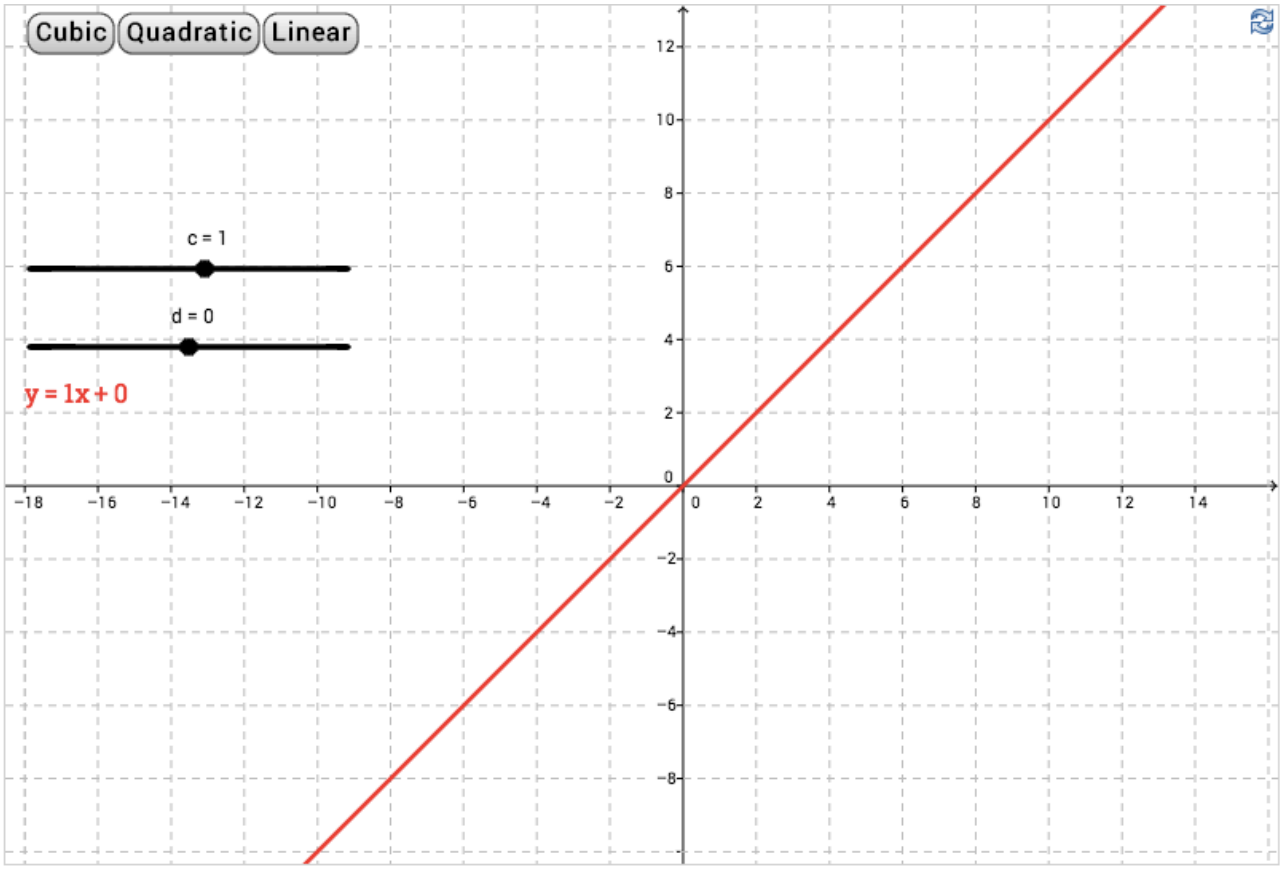
Graphs of Cubic, Quadratic and Linear Functions

Linear Functions



1. At what angle to the horizontal is the graph y = 1x ?

Move slider d to change the constant 0 in y = 1x + 0.

2. What happens to the graph ?

Click the Linear button to reset then move slider c to change the gradient of the graph.

Try y = 2x and y = 0.5x.

3. How does the steepness of the graph change for different amounts of x ?

4. At what angle to the horizontal is y = -1x ?

5. How does it differ from y = 1x ?

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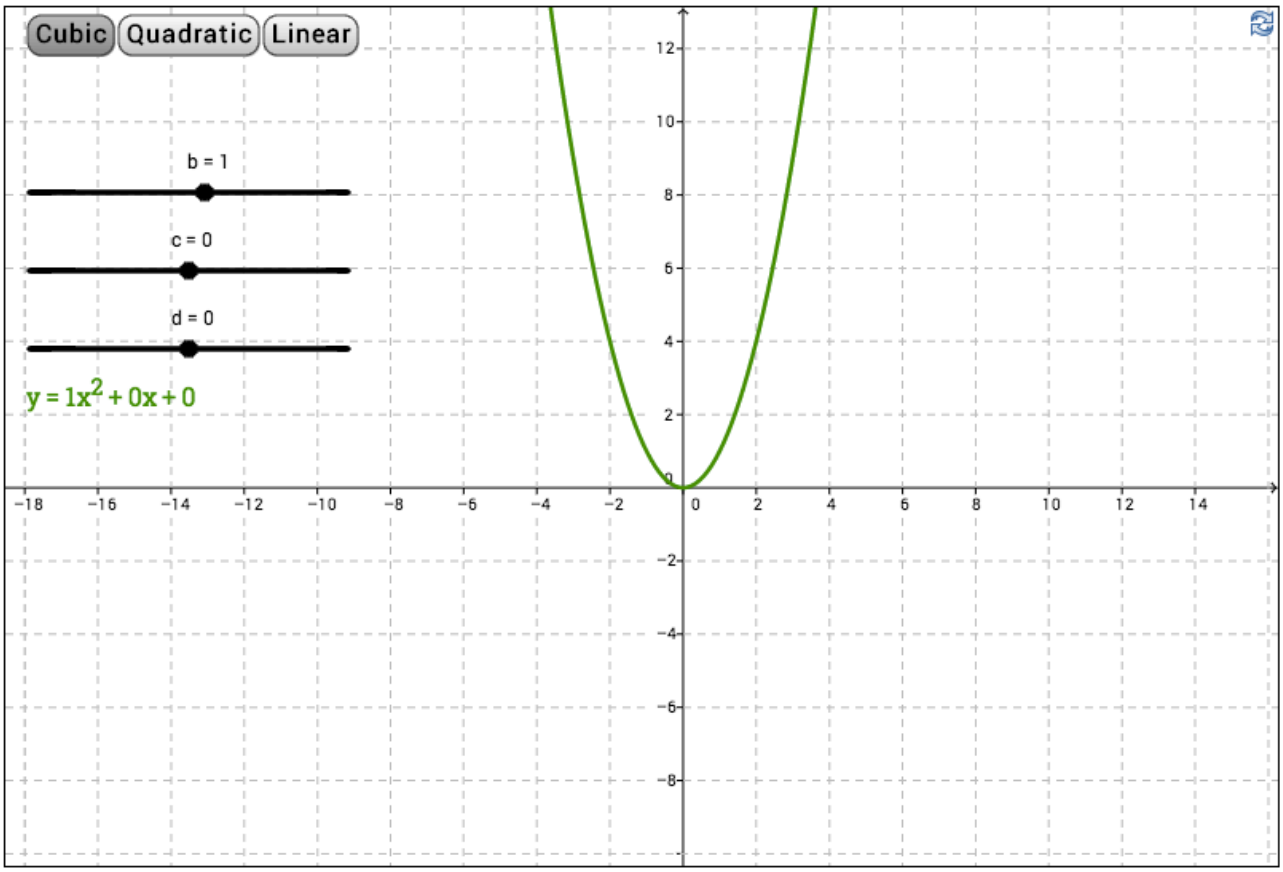
Quadratic Functions



Click the Quadratic button to obtain the graph of $y = x^2$

Move slider d to change the constant.

1. How does this affect the graph ?

Click the Quadratic button to reset. Then move slider b to change the amount of x^2.

2. How does this affect the graph ? What if there is a negative amount of x^2 ?

Click the Quadratic button to reset. Then move slider c to change the amount of x.

3. How does this affect the graph ?

$y = (x + 4)(x - 2)$ expands to $y = x^2 + 2x - 8$. Use the sliders to set up this graph.

4. How does the factorized equation relate to where the graph cuts the x axis ?

$y = (x + 1)(x - 7)$ expands to $y = x^2 - 6x - 7$. Use the sliders to set up this graph.

5. How does the factorized equation relate to where the graph cuts the x axis ?

6. Can you see why these relationships occur ?

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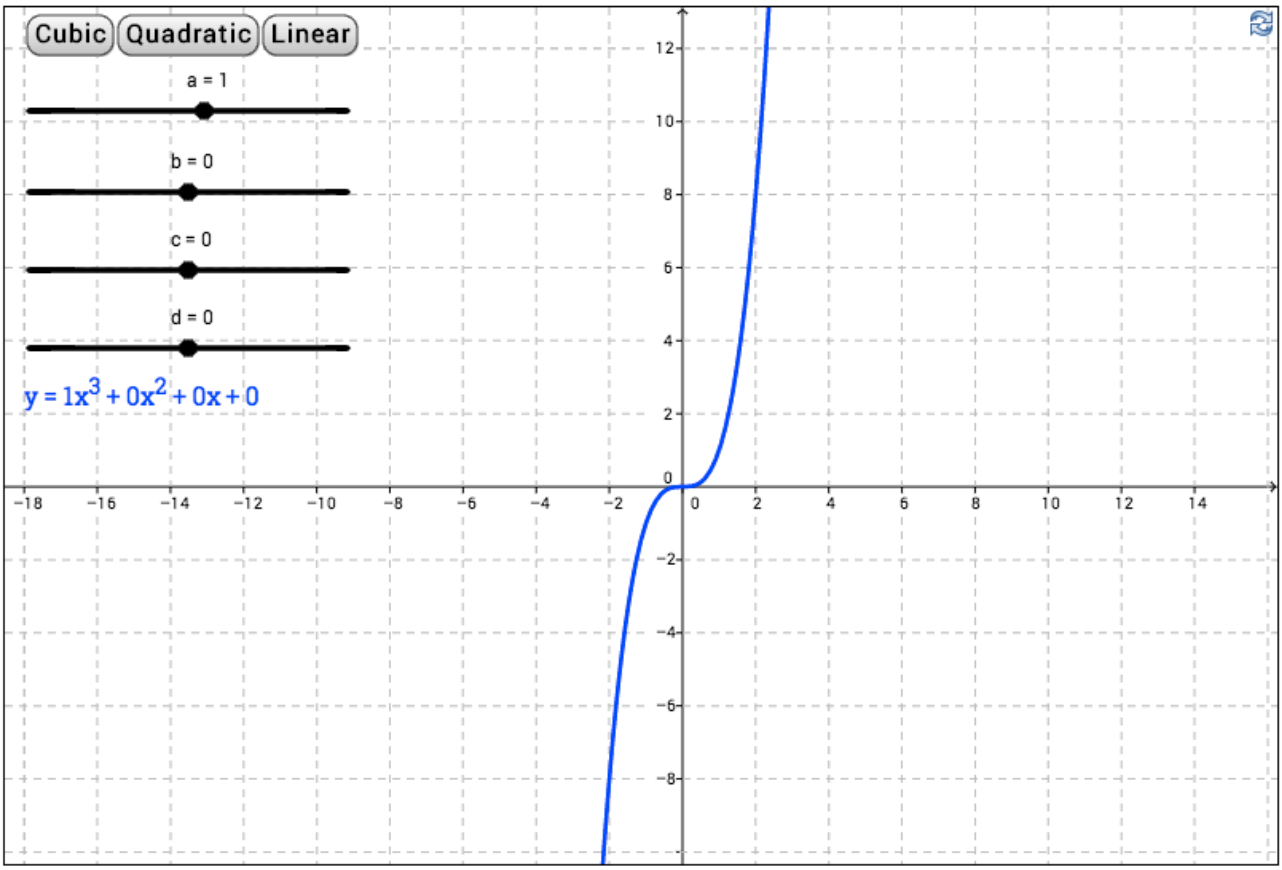
Cubic Functions



Click the Cubic button to obtain the graph of $y = x^3$

Move slider d to change the constant.

1. How does this affect the graph ?

Click the Cubic button to reset. Then move slider a to change the amount of x^3.

2. How does this affect the graph ? What if there is a negative amount of x^3 ?

Click the Cubic button to reset. Then move slider b or slider c.

3. How do the amounts of x^2 and x affect the graph ?

$y = (x + 3)(x + 2)(x - 1)$ expands to $y = x^3 + 4x^2 + 1x - 6$. Use sliders to set up this graph.

4. How does the factorized equation relate to where the graph cuts the x axis ?

$y = (x + 2)(x + 2)(x - 1)$ expands to $y = x^3 + 3x^2 + 0x - 4$. Use sliders to set up this graph.

5. How does the factorized equation relate to where the graph cuts the x axis ?

6. Can you see why these relationships occur ?