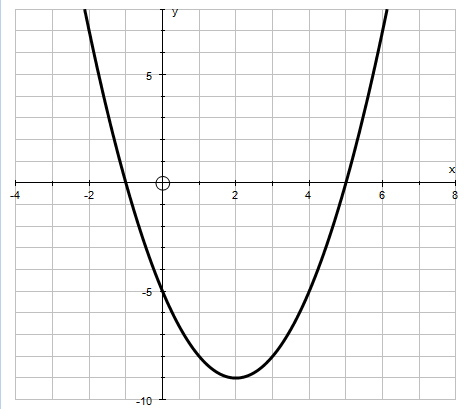
A Level Transition Lessons from GCSE:

Harder Algebra

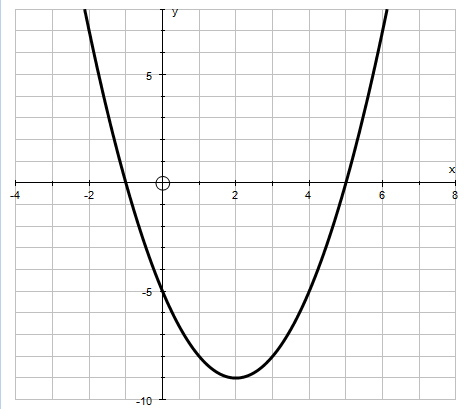
|  |
| --- |
| Contents |
| 03. Quadratic Inequalities  https://www.youtube.com/watch?v=gI2SAhXq1m4 |
| 04. The Discriminant  https://www.youtube.com/watch?v=zikmr7tb6LM |
| **Transformation of Graphs** |
| 01. Stretches  https://www.youtube.com/watch?v=-WbCLbqARh0 |
| 02. Translations  https://www.youtube.com/watch?v=UKhUiMtH4Ss |
| 03. Equations of new graphs  https://www.youtube.com/watch?v=X3JEMvgRbSA |
| 04. Completed Square Form  https://www.youtube.com/watch?v=dC2uy8hPSqI |

03: Quadratic Inequalities

Give me a value for where…

Examples:

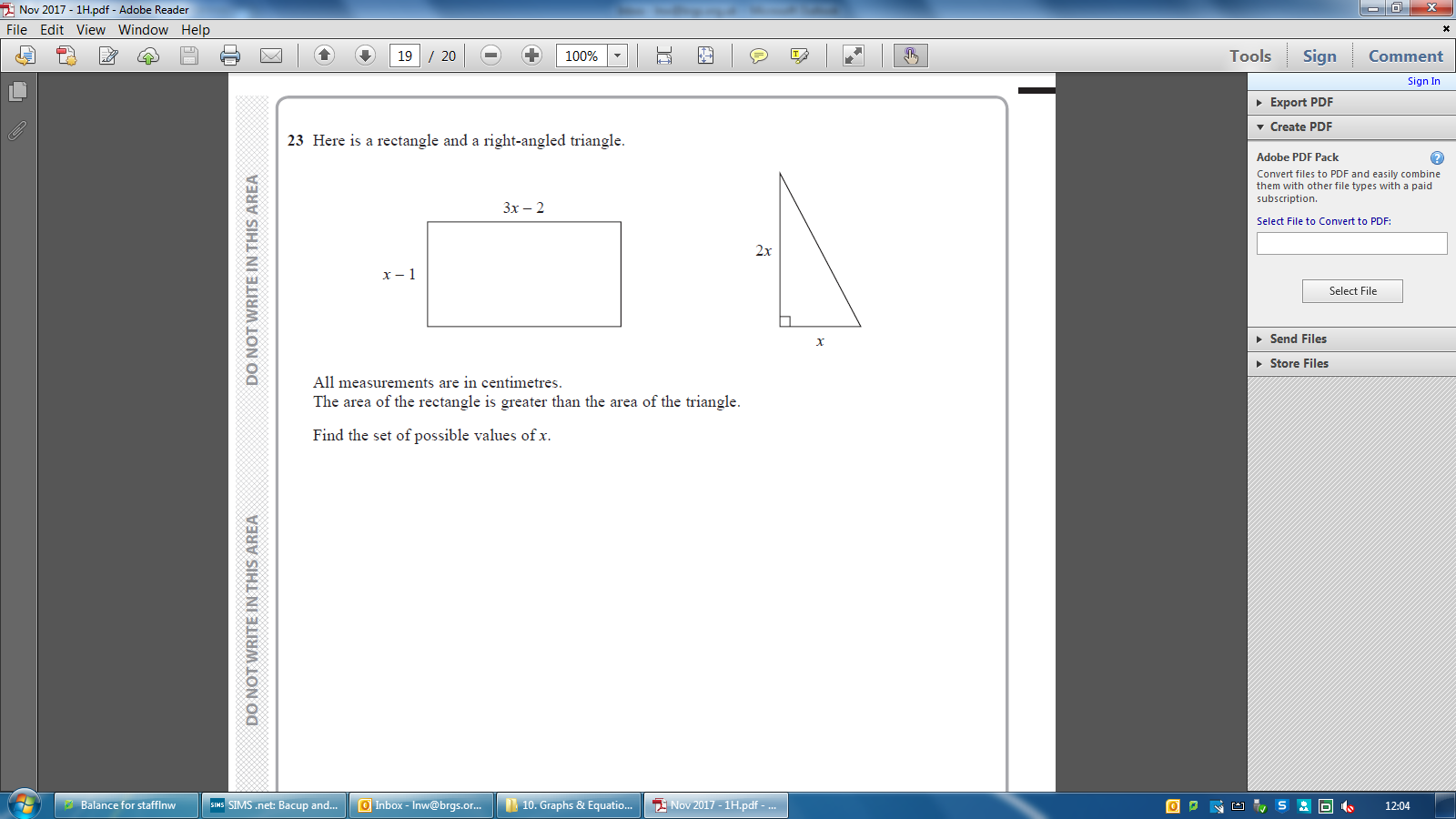
1) Solve

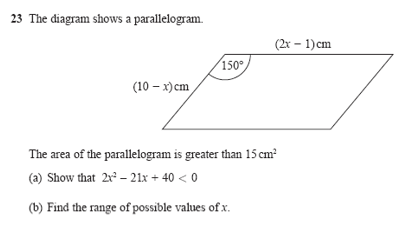


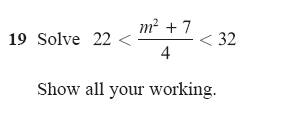
2) Find the set of values for which satisfy 3. Solve

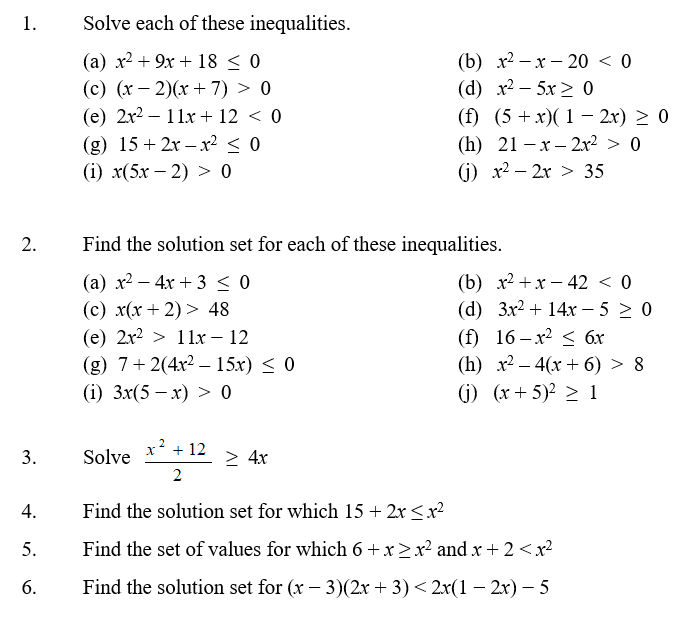
4) Find the set of values for which satisfy 5) Find the set of values for which satisfy

Exam Questions:  
Screen Clipping









04: The Discriminant

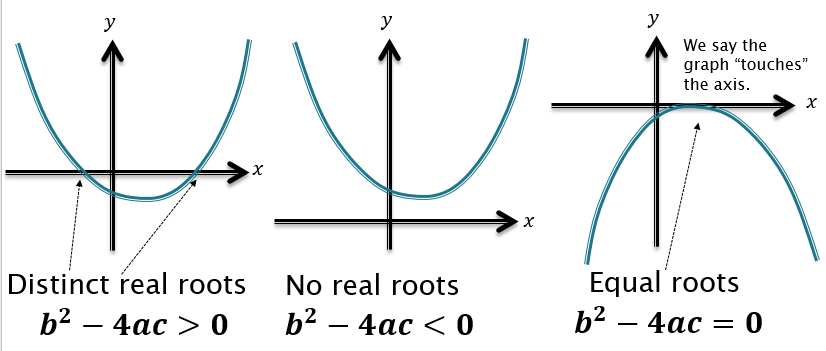
Starter: Choose 1 method to Solve

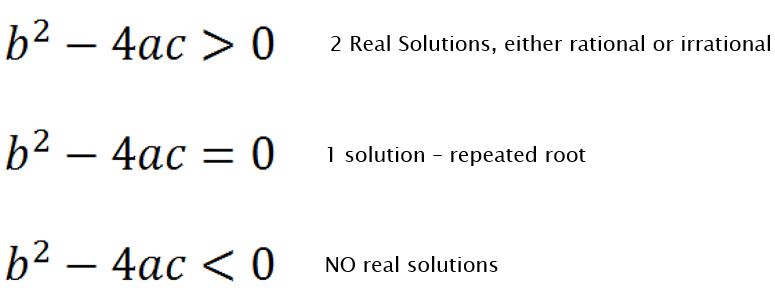
Quadratic Formula:

Solve the following using the quadratic formula, show the full working…

|  |  |  |
| --- | --- | --- |
| 1) | 2) | 3) |

is known as the discriminant and is very important as it tells you about the nature of the solutions of the equations.

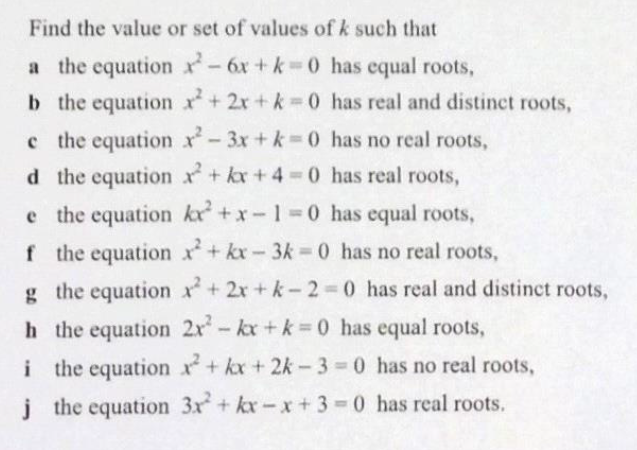




|  |  |  |
| --- | --- | --- |
| Equation | Discriminant | No. of roots |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

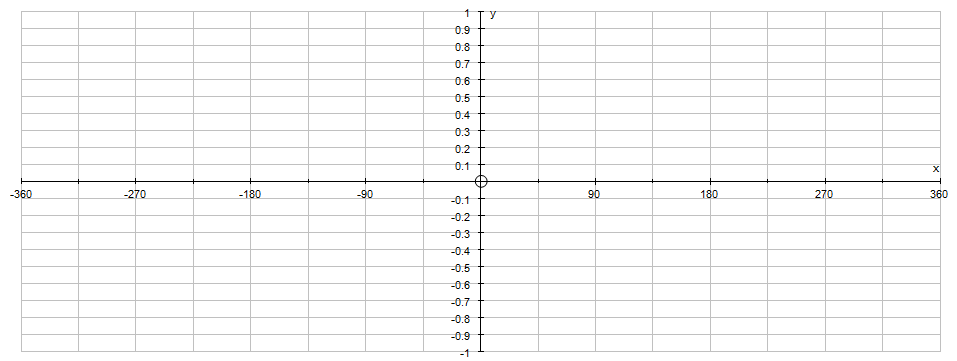
Examples:

|  |  |
| --- | --- |
| 1) Find the set of values of for which the equation  has no real roots. | 2) Find the values of for which touches the -axis |
| 3) Find the values of for which has two distinct real roots. | 4) Find the set of values of for which the graph of does not intersect the -axis. |



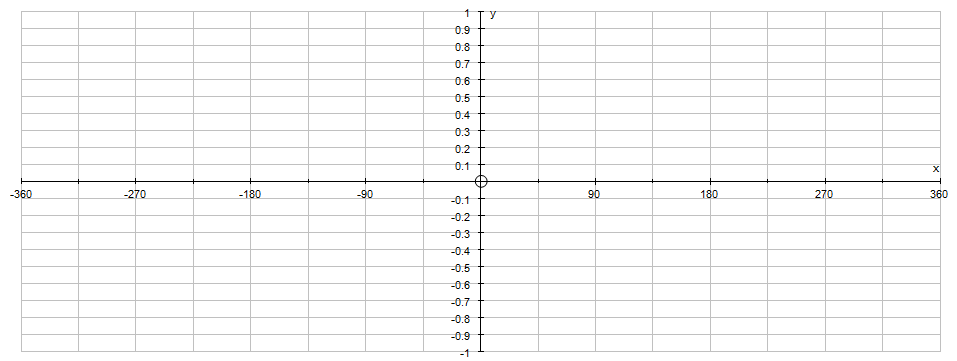
01: Transformations of Graphs

Recap of Trig Graphs.

Sketch

Think…

* ‘something happens every … either 1, 0, -1
* Makes an ‘S’ over the origin
* Repeats every (period)
* Maximum 1, minimum -1 (amplitude)

Sketch

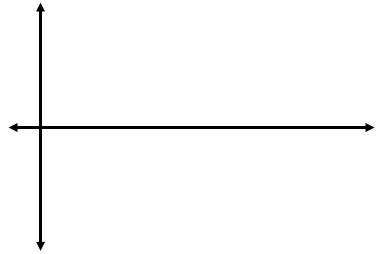
Think…

* ‘something happens every … either 1, 0, -1
* Makes an ‘C’ over the origin
* Repeats every (period)
* Maximum 1, minimum -1 (amplitude)

Stretches

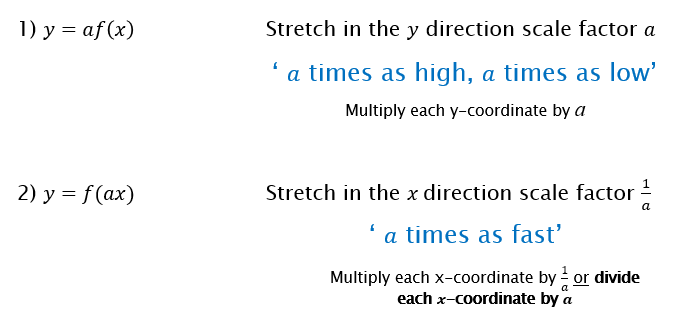
|  |  |
| --- | --- |
| Sketch | Sketch |
| Sketch | Sketch |
| Sketch | Sketch |

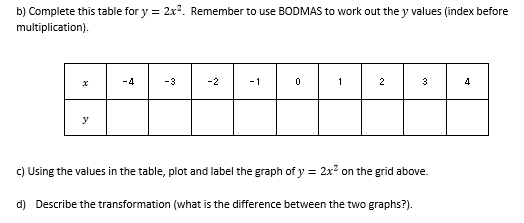
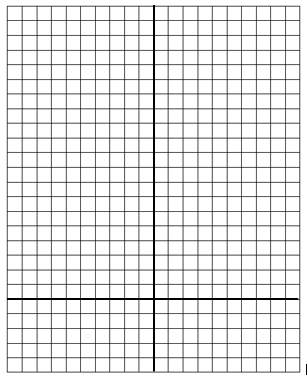
Sketch

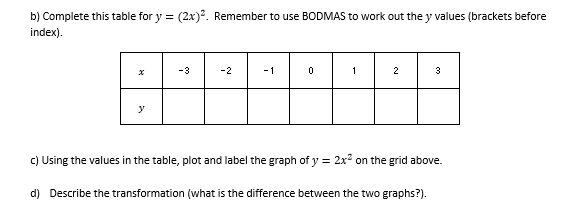
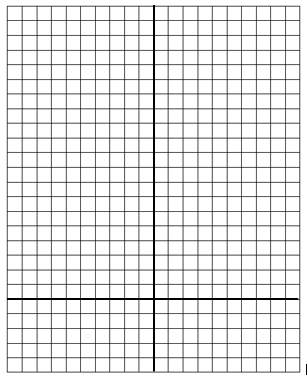


|  |  |  |
| --- | --- | --- |
| **Graph** | **Amplitude** | **Period** |
| y=sinx |  |  |
| y=2sinx |  |  |
| y=5sinx |  |  |
| y=sin(3x) |  |  |
| y=2sin(4x) |  |  |
| y=6sin(6x) |  |  |
| y=cosx |  |  |
| y=3cosx |  |  |
| y=cos4x |  |  |

Stretches



Screen Clipping

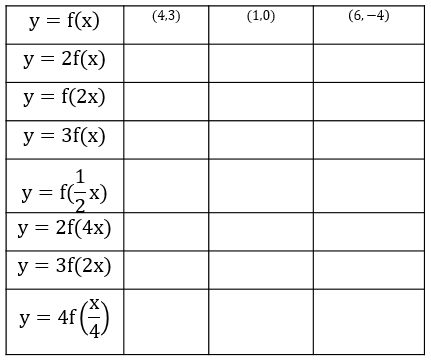
Screen Clipping

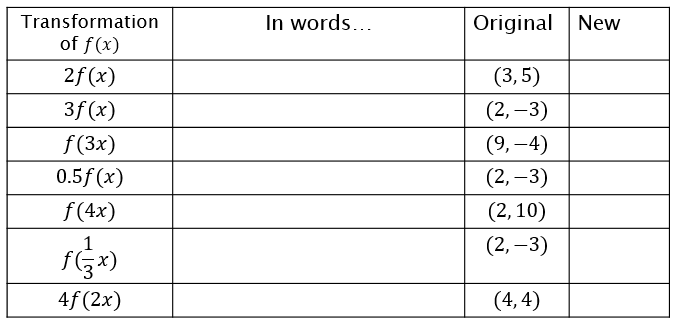
|  |  |
| --- | --- |
| 1) Screen Clipping | 2)  Screen Clipping |

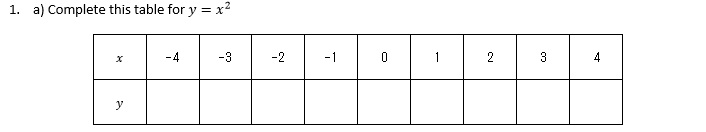
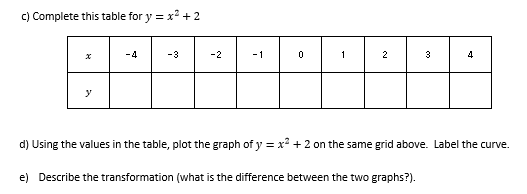
|  |  |
| --- | --- |
| 3)  Screen Clipping | 4)  Screen Clipping |

GCSE Questions

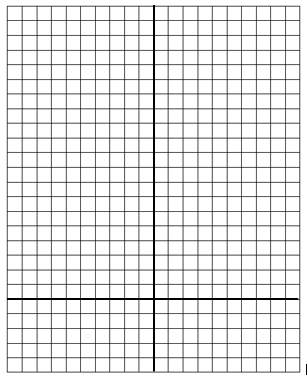
|  |  |  |
| --- | --- | --- |
| Here is the graph of sketch )  Screen Clipping | Here is the graph of sketch )  Screen Clipping | Here is the graph of sketch )  Screen Clipping |

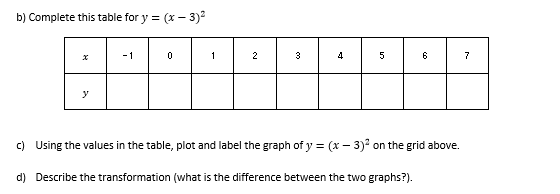
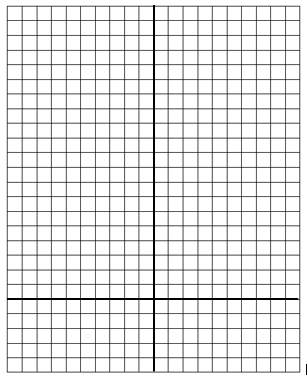


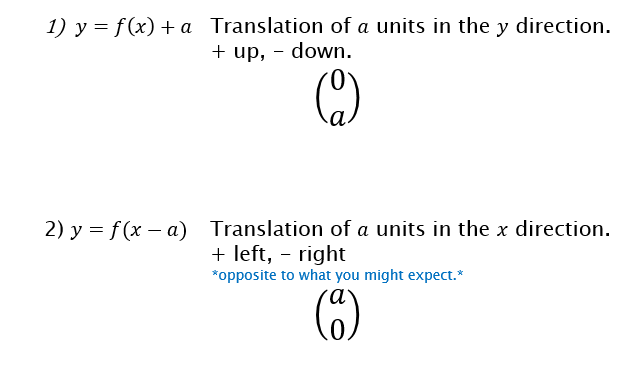


Screen Clipping02: Translations

|  |  |
| --- | --- |
| Sketch | Sketch |
| Sketch | Sketch |

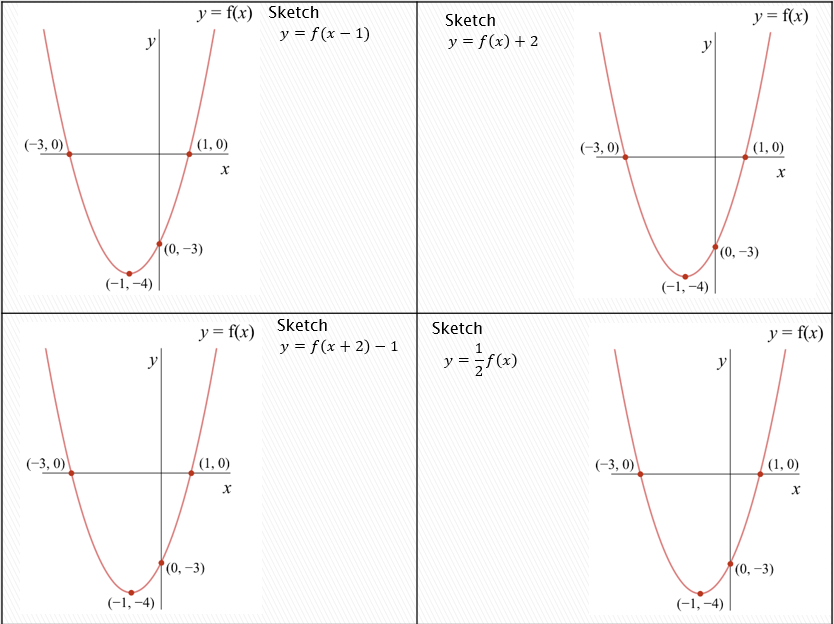


Screen Clipping

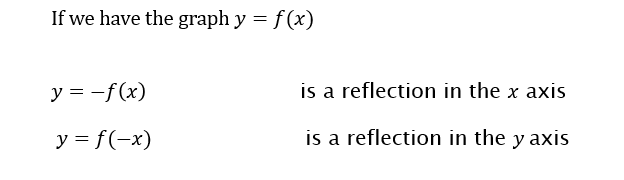


|  |  |
| --- | --- |
| 1) Screen Clipping | 2)  Screen Clipping |

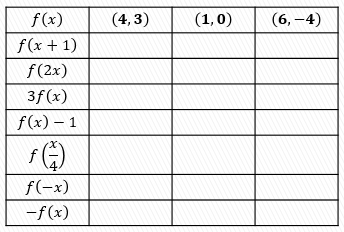
|  |  |
| --- | --- |
| Screen Clipping1) | Screen Clipping2) |

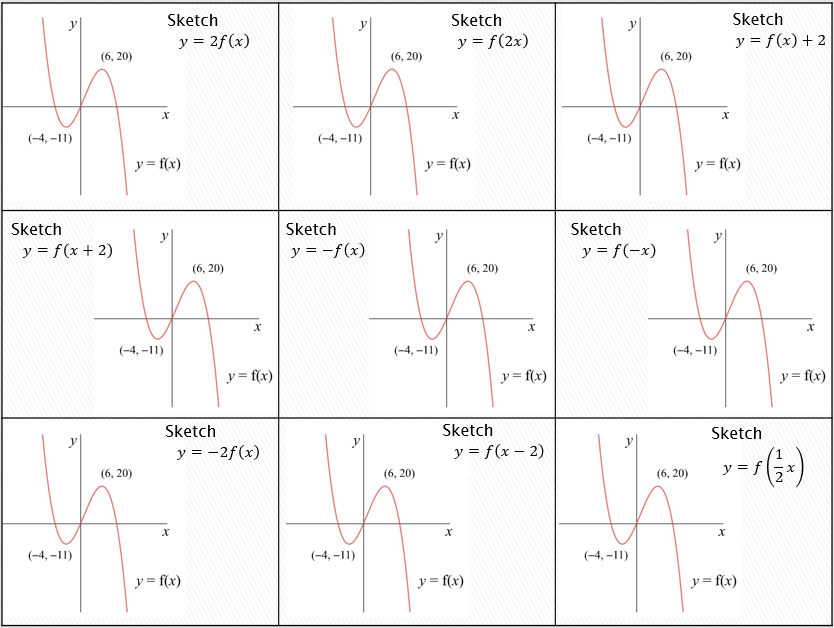
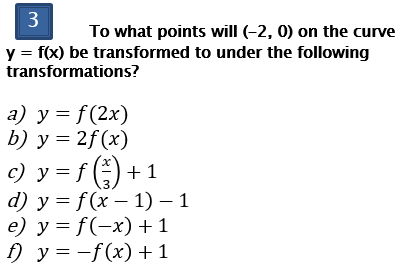


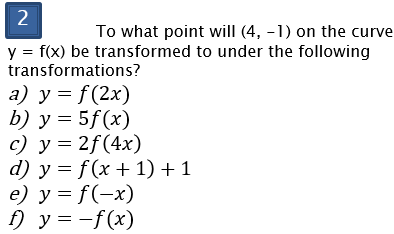
Reflections



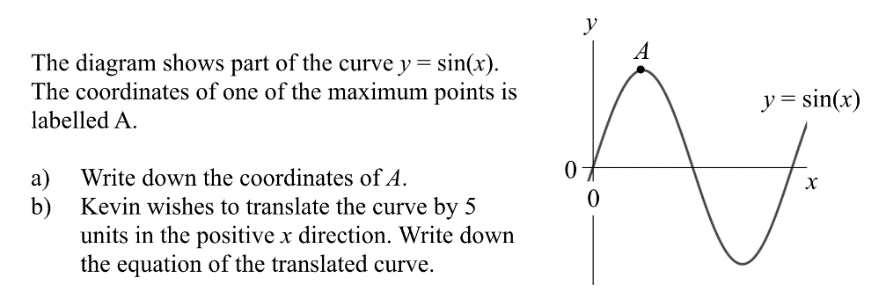
|  |  |
| --- | --- |
| 1) Screen Clipping | 2)  Screen Clipping |







03: Sum Up & New Equations



|  |  |  |
| --- | --- | --- |
| Here is the graph of  Sketch  a)  Screen Clippingb) Find the new equation | Here is the graphs of  Sketch  a)  Screen Clippingb) Find the new equation | Here is the graph of  Sketch  a)  Screen Clippingb) Find the new equation |

Further example:

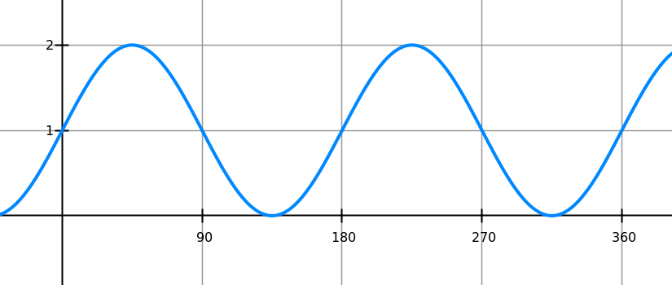
The graph of is translated by vector

What is the equation of the new graph?

Describing Transformations of trig graphs (killer)

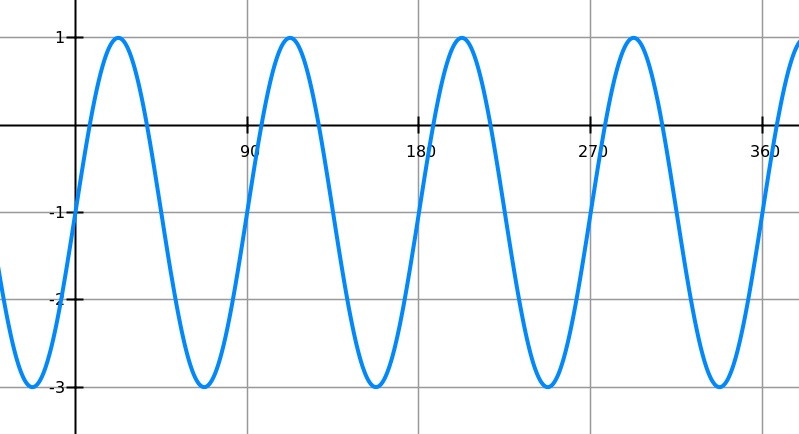
The graph shows the curve with equation .

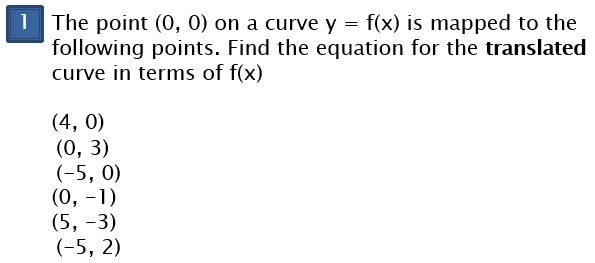
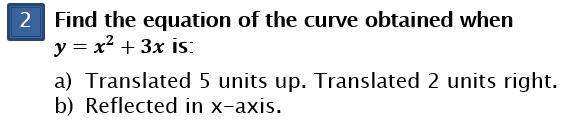
Determine the constants and .



The graph shows the line with equation .

Determine the constants and .





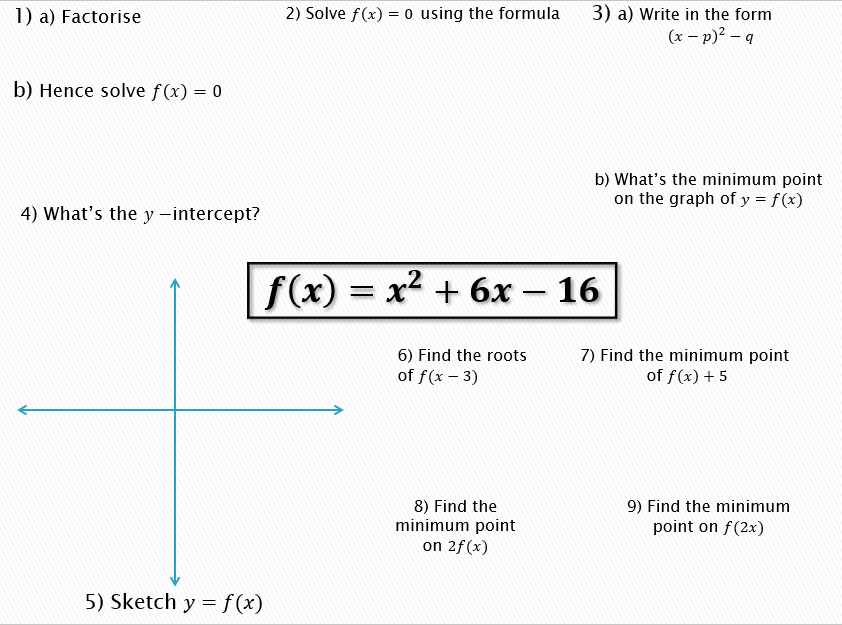
|  |  |
| --- | --- |
|  |  |
| 2. | 3. |

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
| 7. | 8. |

|  |
| --- |
| 9. |

04: Completed Square Form

Starter



|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  | 4) 2 |

Translations of

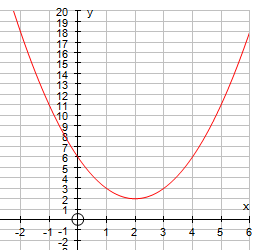
Example 1: Write in the form of .

Sketch the graph and state the minimum point and the line of symmetry.

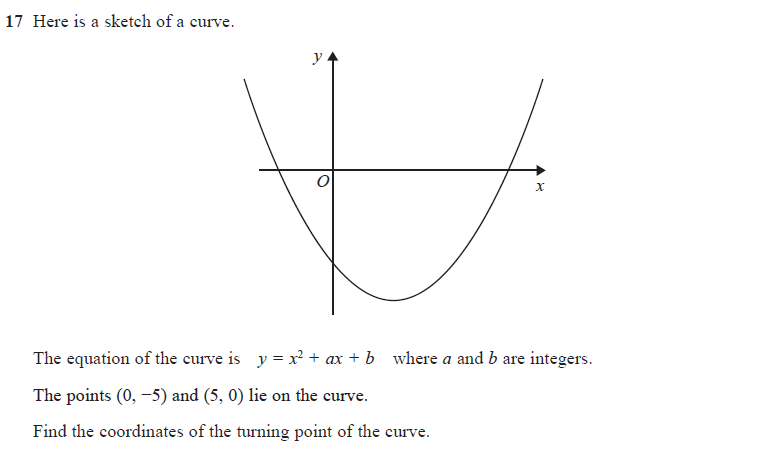
Sketch the following graphs after writing in completed square form. Describe the translation of .

|  |  |  |  |
| --- | --- | --- | --- |
| 1) |  |  | 1. 4) |

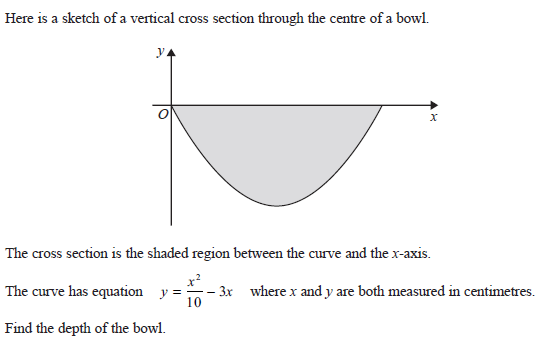
Finding the equation of the curve



Killer GCSE ?



2.



A Level Challenge ?

