**2A The |Modulus| Function**

1. The function f(x) is defined

$$f(x)=\left|2x-3\right|+1$$

find:

1. f(5)
2. -1)

1. a) Sketch the graph of $y=\left|3x-2\right|$



1. Solve the equation $\left|2x-1\right|=5$



1. Solve the equation $\left|3x-5\right|=2-\frac{1}{2}x$



1. Solve the inequality $\left|5x-1\right|>3x$



**2B Part 1 Domains & Ranges**





1. Find the range of the following function, and state if it is one-to-one or many-to-one.
2. f(x) = 3x – 2, domain {x = 1, 2, 3, 4}
3. f(x) = 3x – 2, {x = 1, 2, 3, 4}
4. g(x) = x2, domain {x є R, -5 ≤ x ≤ 5}
5. g(x) = x2, {-5 ≤ x ≤ 5}
6. h(x) = 1/x, domain {x є R, 0 < x ≤ 3}
7. h(x) = 1/x, {x є R, 0 < x ≤ 3}

**2B Part 2 Solving Equations with Functions**

1. Given that the function g(x) = 2x2 + 3, find;
2. the value of g(3)
3. the value(s) of a such that g(a) = 35
4. the range of the function
5. The function f(x) is defined by:



1. Sketch f(x) stating its range



1. Find the values of a such that f(a) = 19

**2C Composite Functions**

1. Given:

 f(x) = x2 g(x) = x + 1

 Find:

1. fg(x)
2. gf(x)
3. Given:

 f(x) = 3x + 2 g(x) = x2 + 4

 Find:

1. fg(x)
2. gf(x)
3. f2(x)
4. The values of b so that fg(b) = 62
5. The functions $f$ and $g$ are defined by:

$$f:x\rightarrow \left|2x-8\right|$$

$$g:x\rightarrow \frac{x+1}{2}$$

1. Find $fg(3)$
2. Solve $fg\left(x\right)=x$

**2D Inverse Functions**

1. Find the inverse of the function:

$$f\left(x\right)=\frac{3}{x-1}, \left\{x\in R, x\ne 1\right\}$$

1. The function:

 $f\left(x\right)=\sqrt{x-2},  x\in R,  x\geq 2$

1. State the range of $f(x)$
2. Find the function $f^{-1}(x)$ and state its domain and range
3. Sketch $y=f(x)$ and $y=f^{-1}(x)$ and the line $y=x$
4. The function $f(x)$ is defined by:

$$f\left(x\right)=x^{2}-3, x\in R, x\geq 0.$$

1. Find $f^{-1}(x)$
2. Sketch $y=f^{-1}(x)$ and state its domain
3. Solve the equation $f\left(x\right)=f^{-1}(x)$

**2E Modulus Graphs**

1. Given that:

$$g\left(x\right)=sinx, -360\leq x\leq 360$$

1. Sketch $y=g(x)$



1. Sketch $y=\left|g(x)\right|$



1. Sketch $y=g\left(\left|x\right|\right)$



1. The diagram shows the graph of $y=h(x)$, with five points labelled.



Sketch each of the following graphs, labelling points corresponding to $A$, $B$, $C$, $D$ and $E$, as well as any intersections with the axes.

1. $y=\left|h(x)\right|$



1. $y=h\left(\left|x\right|\right)$



**2F Multiple Graphical Transformations**

1. The diagram shows the sketch of $y=f(x)$.



1. Sketch the graph of $y=2f\left(x\right)-1$



1. Sketch the graph of $y=f\left(x+2\right)+2$



1. Sketch the graph of $y=\frac{1}{4}f\left(2x\right)$



1. Sketch the graph of $y=-f\left(x-1\right)$



1. Given that:

$$f\left(x\right)=lnx, x>0$$

Sketch the graphs of:

1. $y=2f\left(x\right)-3$



1. $y=\left|f(-x)\right|$



**2G Solving Modulus Equations**

1. Given the function:

$$t\left(x\right)=3\left|x-1\right|-2, x\in R$$

1. Sketch the graph of the function



1. State the range of the function
2. Solve the equation $t\left(x\right)=\frac{1}{2}x+3$



1. The function $f$ is defined by:

$$f:x\rightarrow 6-2\left|x+3\right|$$

A sketch of the graph is shown.



1. State the range of $f$
2. Explain why $f^{-1}$ does not exist
3. Solve the inequality $f\left(x\right)>5$

