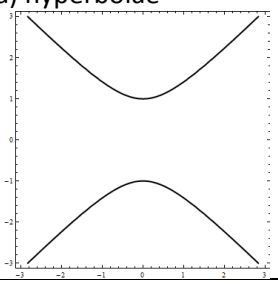
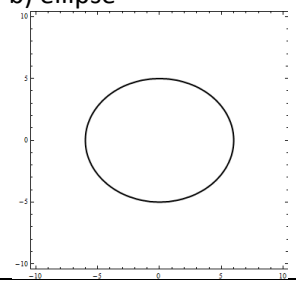
Answer Sheet 2

1.

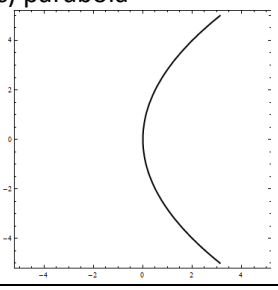
a) hyperbolae



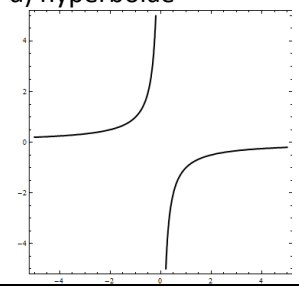
b) ellipse



c) parabola



d) hyperbolae



2. $f\left(x+1\right)=\left(x+1\right)^2-\left(x+1\right)=x^2+x=\left(-x\right)^2-\left(-x\right)=f\left(-x\right)$

3. a) $f\left(x\right):=\dfrac{2-4x}{x^5}$ b) $f\left(x\right):=2\dfrac{x-1}{x+1}$

4. a) domain is $\left(-1,1\right)$, range is $\left[0,1\right)\cup\left(1,2\right)$
b) domain and range are both $\mathbb{R}$

5. a) $f\left(x\right):=3x+1 \quad if \;\; 0<x<2$ b) $f\left(x\right):=\dfrac{1}{1-x}$

6. a) 1/2 b) -2/3 c) 0

7. a) The graph of the function for f, as it passes through the point $\left(c,f\left(c\right)\right)$ could be drawn without lifting the pencil. This means that small changes in *x*, in the neighbourhood of *c*, will produce small changes in the value of the function.

b) $\forall\delta>0\;\exists\varepsilon>0 \qquad \left|x-c\right|<\varepsilon \quad\Rightarrow\quad \left|f\left(x\right)-f\left(c\right)\right|<\delta$