

## MATH191: Practice Sheet 1

1. For each of the following four sets, state whether or not each of the numbers  $-2$ ,  $0$ ,  $0.3$ ,  $1$ , and  $\pi$  belongs to the set. a)  $[0, 1]$ ; b)  $(0, 1]$ ; c)  $(0, 1)$ ; d)  $(-\infty, 0.5]$ .

(Set out your answer by putting a tick or a cross in each box in a **copy** of the table below, depending on whether or not the given element belongs to the given set.)

	$-2$	$0$	$0.3$	$1$	$\pi$
$[0, 1]$					
$(0, 1]$					
$(0, 1)$					
$(-\infty, 0.5]$					

2. Sketch the graphs, and state the maximal domain, range and zeros of each of the following functions:

a)  $f(x) = x^2 + 4$ ;      b)  $f(x) = \frac{1}{x^2}$ ;      c)  $f(x) = |x - 2|$ ;      d)  $|x| - 1$ .

3. State the maximal domain and find the zeros of the following rational functions:

a)  $f(x) = \frac{x}{(x - 2)^2}$ ;      b)  $f(x) = \frac{x^2 - 1}{(x + 1)(x + 2)}$ .

4. Determine whether each of the following functions is even, odd, or neither:

a)  $f(x) = x^3 + 1$ ;      b)  $f(x) = \frac{x}{x^2 + 2}$ ;      c)  $f(x) = x^{18} - 3x^4 + 2$ .