

## MCS22 Homework 1

Find the coordinates of all relative and absolute extrema.

1.  $f(x) = x - x^2$   $[0, 1]$

2.  $f(x) = x - x^3$   $[0, 1]$

3.  $f(x) = x - x^3$   $(-\infty, \infty)$

4.  $f(x) = x^3 - 6x$   $[0, 2]$

5.  $f(x) = \frac{1}{x-2}$   $(1, 3)$

6.  $f(x) = x^4 - 2x^2 + 2$   $[0, 1]$

7.  $f(x) = \sqrt{x} - x$   $[0, \infty)$

8.  $f(x) = x - \sin x$   $[0, \frac{\pi}{2}]$

9.  $f(x) = \cos^2 x + \sin x$   $[0, \pi]$

10.  $f(x) = 2 \sin x + \sin 2x$   $[0, 2\pi]$