

## MA1 Homework 11

1. For each function, find the equations of all vertical and horizontal asymptotes and find the coordinates of any removable points of discontinuity.

$$(a) f(x) = \frac{x^2}{x^2 + x - 6}$$

$$(b) f(x) = \frac{3x - 2}{\sqrt{2x^2 + 1}}$$

$$(c) f(x) = \frac{9 - 6x + x^2}{x^2 - 9}$$

$$(d) f(x) = \frac{x - 9}{\sqrt{4x^2 + 3x + 2}}$$

$$(e) f(x) = \frac{|x| + 1}{|x| - 1}$$

$$(f) f(x) = \frac{27x^3 - 1}{3x - 1}$$

2. Find a value for the constant  $k$ , if possible, that will make the function continuous.

$$f(x) = \begin{cases} kx^3 - 2 & x > 1 \\ 4x^2 - 7x & x < 1 \\ -4 & x = 1 \end{cases}$$