1. Consider the following (piecewise-defined) function:

$$w(t) = \begin{cases} t^2 & t < -2 \\ \frac{t+6}{t^2-t} & -1 < t < 2 \\ 3t - 2 & t \geq 2 \end{cases}$$

Compute the following:

(a) $w(-3/2)$

(b) $w(2)$

(c) $w(3/2)$

(d) $\lim_{x \to -2} w(t)$

(e) $\lim_{t \to -1^+} w(t)$

(f) $\lim_{t \to 2} w(t)$

(g) $\lim_{t \to 0} w(t)$

(h) Which of these are 'trick questions'? Why?

2. Compute the following limits. Show all algebraic manipulations, and explicitly which limit laws you are using.

   (a) $\lim_{x\to 4} \dfrac{x^2 - x - 12}{x^2 - 3x - 4}$

   (b) $\lim_{x\to -2} \dfrac{x^2 + 5x + 6}{x^2 + x - 2}$

   (c) $\lim_{x\to 1} \dfrac{x^2 + x - 2}{x^3 + 3x^2 - x - 3}$

(d) $\lim_{x\to 0} \dfrac{\sin(x)}{x^3 - 3x^2 + 2x}$ (Hint: what is $\lim_{x\to 0} \dfrac{\sin(x)}{x}$?)

(e) $\lim_{x\to 1} \dfrac{x-1}{\sqrt{x}-1}$

(f) $\lim_{x\to 3} \dfrac{2x}{x^2 - 9}$