1. Evaluate $\lim_{x\to 2+} f(x)$ and $\lim_{x\to 2-} f(x)$ for the function

$$f(x) = \frac{x^2 - x - 2}{|x^2 - 2x|} \tag{1}$$

Is this function continuous at $x = 2$? If not what type of discontinuity does f(x) have?(removable or non removable)

2. Find the limit.

$$\lim_{x\to 0} \frac{1 - \cos(x)}{\sec(x) - 1} \tag{2}$$

hint: Use the definition of $\sec(x) = \frac{1}{\cos(x)}$ and simplify!

3. Find all vertical and horizontal asymptotes of the following function.

$$f(x) = \frac{3x^2 - 7x - 1}{x^2 - 6x - 16} \tag{3}$$