F-C1

1. Use the definition of continuity to show that $f(x)$ is continuous at x=1 $f(x) = \begin{cases} 3x + 5 & x < 1 \\ 8x & x = 1 \\ 2x^2 + 6 & x > 1 \end{cases}$

F-C2

2. Find the values of a and b that will make this function continuous everywhere:
$$f(x) = \begin{cases} x^2 - 5 & x < 0 \\ ax + b & 0 \le x < 2 \\ 2x^2 - 6 & x \ge 2 \end{cases}$$

F-C3

1. Find and classify any discontinuities of the function. Justify your answer with limits.
$$f(x) = \frac{x - 3}{2x^2 - 2x - 12}$$