**Let** $f(x) = \dfrac{x^2 - 3x + 2}{2x^2 - 8}$

1. Does $f$ have any roots? If so, where?

2. Does $f$ have any vertical asymptotes? If so, where?
   What is the behavior of $f$ near the asymptote(s)?

3. Does $f$ have any horizontal asymptotes? If so, where?
   What is the behavior of $f$ near the asymptote(s)?

4. Use your answers to sketch a graph of $y = f(x)$
   Verify your answer using Desmos or a graphing calculator

5. Find a function $g(x)$ that has vertical asymptotes at $x = -1$, $x = 2$, and $x = 5$ and has a horizontal asymptote at $y = 4$.