

1. Let $f(x) = \frac{x^2 - 3x + 2}{2x^2 - 8}$

(a) Show that $f(x)$ is undefined at $x = -2$ and $x = 2$

(b) Find $\lim_{x \rightarrow 2} f(x)$. Does $f(x)$ have a vertical asymptote at $x = 2$?

(c) Find $\lim_{x \rightarrow -2^-} f(x)$ and $\lim_{x \rightarrow -2^+} f(x)$. Does $f(x)$ have a vertical asymptote at $x = -2$?

(d) Does $f(x)$ have any horizontal asymptotes?

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