

2. (15 points)

- (a) True or false: If a function has a horizontal asymptote  $y = 3$ , then

$$\lim_{x \rightarrow \infty} f(x) = 3$$

- (b) True or false: A function can have 100 vertical asymptotes.  
(c) True or false: A function can have 100 horizontal asymptotes.  
(d) Find the vertical asymptote(s), if any exist, of the function:

$$f(x) = \frac{x^3 - 1}{x^2 - 1}$$

- (e) Find the horizontal asymptote(s), if any exist, of the function:

$$f(x) = \frac{x^3 - 1}{x^2 - 1}$$