

1. For the following functions:

- Find the domain of f .
- Find the x and y -intercepts of f .
- Find the vertical asymptotes of f .
- Find the horizontal asymptotes of f .

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

$$(b) f(x) = \frac{x^2}{x^2+x-6}$$

$$(c) f(x) = \frac{x^2+4}{x}$$

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

$$(e) f(x) = \frac{4x^2}{x^2+1}$$

$$(f) f(x) = \frac{x^2-4}{x}$$

$$(g) f(x) = \frac{x^3-x^2-2x}{2x^3+2x^2-4x}$$

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

2. Solve.

$$(a) \frac{4}{a^2-1} + \frac{a-2}{a-1} = \frac{a-3}{a+1}$$

$$(b) \frac{k^2+9}{k^2-3k+2} - \frac{6}{k-1} = \frac{2k}{k-2}$$

$$(c) \frac{n+4}{n+3} - \frac{n-3}{n-1} = \frac{3-n^2}{n^2+2n-3}$$

$$(d) \frac{2v+4}{2v-1} - 2 = \frac{17-v}{2v^2+5v-3}$$

$$(e) \frac{5}{x-2} - \frac{4x+1}{(x-2)^2} + \frac{3x+2}{(x-2)^3} = 0$$

$$(f) \frac{3d-2}{d+2} - \frac{3d}{d+1} = \frac{1}{d-3}$$