

E - Identifying Key Features of Graphs of Rational Functions - Notes

Identify the vertical asymptotes, x-intercepts, and horizontal asymptote of each rational function.

$$1) f(x) = \frac{(x+2)(x+4)}{x^2+6x+8} = \frac{\quad}{-4x}$$

vertical: $x=0$
 horizontal: none
 BOTN
 x-ints: $-2, -4$

$$2) f(x) = \frac{(x+1)(x+2)}{x^2+3x+2} = \frac{\quad}{4(x-1)(x+1)}$$

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

vertical: $x=1$
 horizontal: $y = \frac{1}{4}$
 EATS DC
 x-ints: -2

$$3) f(x) = \frac{1}{x^2-4} = \frac{\quad}{(x-2)(x+2)}$$

vertical: $x=2, x=-2$
 horizontal: $y=0$
 BOBO
 x-ints: none

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

vertical: $x=3$
 horizontal: $y=1$
 EATS DC
 x-ints: 0