

Unit 5 REVIEW:

RATIONAL FUNCTIONS:

To find vertical asymptotes: set the denominator factors equal to 0. You can't divide by 0 so that will give you a vertical asymptote.

To find x-intercepts: set the numerator factors equal to 0

To find y-intercepts: set every x value equal to 0

To find the hole: set the factor that divides from the top and the bottom equal to 0.

To find horizontal asymptotes: BOBO, BOTS, EATSDC

$$y = \frac{(x - \text{intercepts})(\text{hole})}{(\text{vertical asymptotes})(\text{hole})}$$

Example a) $y = \frac{x^2 - 5x + 6}{x^2 - 2x - 3}$ find the vertical asymptote, hole, horizontal asymptote, x-intercepts, and y-intercepts.

$$y = \frac{(x - 2)(x - 3)}{(x - 3)(x + 1)} = \frac{(x - 2)}{(x + 1)}$$

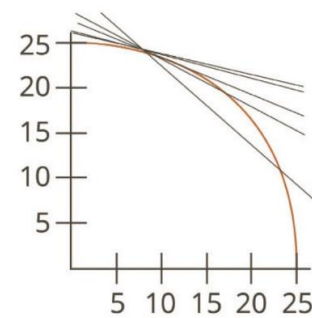
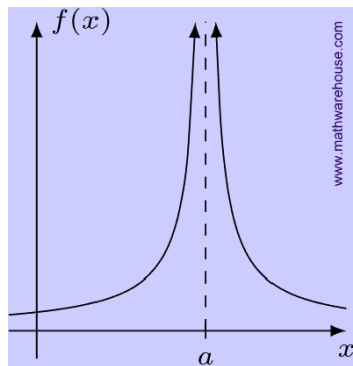
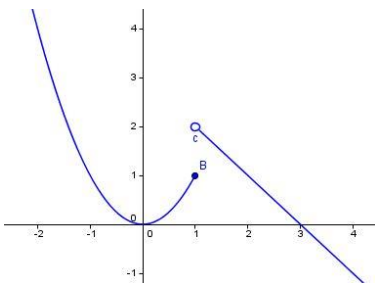
Hole at $(3, \frac{1}{4})$, vertical asymptote at $x = -1$, x-intercept at $(2, 0)$, horizontal asymptote at $y = 1$, y-intercept at $(0, -2)$.

$$\lim_{x \rightarrow c} f(x) = L$$

Rate of change: $\frac{f(x) - f(c)}{x - c}$

$$\lim_{x \rightarrow 1} f(x) =$$

$$\lim_{x \rightarrow a} f(x) =$$



What is the above diagram representing?

As the two points of the secant line get closer together, the line gets closer to a tangent line.

Derivative:

Power Rule: if $f(x) = x^n$, then $f'(x) = nx^{n-1}$