

Give an example of a rational function with the following properties.

1. An x-intercept of  $(2, 0)$  and a vertical asymptote of  $x = 1$
2. An x-intercept of  $(2, 0)$  and a y-intercept of  $(0, 3)$
3. A vertical asymptote of  $x = 1$  and a horizontal asymptote of  $y = 2$