

## Advanced Math

2-7 D1 Notes

2-7

(Day 1)

Thursday, December 14, 2017 1:06 PM

### Rational Functions and Asymptotes

**Asymptote Rules** given the rational function  $f(x) = \frac{p(x)}{q(x)}$

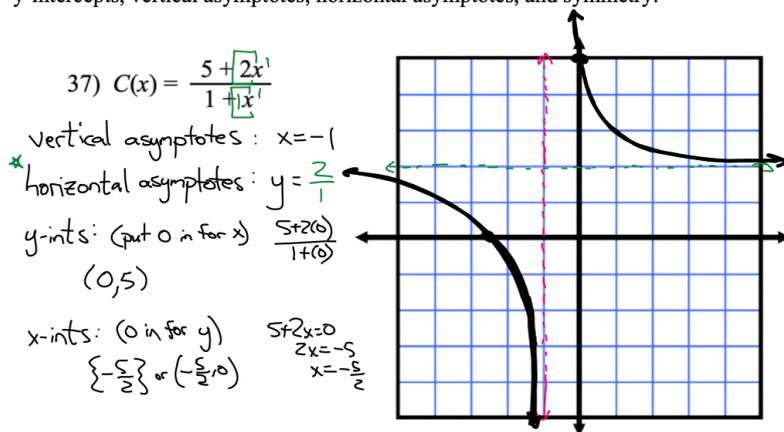
**vertical asymptotes:** occurs when  $q(x)=0$  and  $q(x)$  is NOT a factor of  $p(x)$

**hole:** occurs when  $q(x)=0$  and  $q(x)$  IS a factor of  $p(x)$

**horizontal asymptotes:**

- a: if the degree of  $q(x) >$  degree of  $p(x)$ , always at  $y=0$
- b: if the degree of  $q(x) =$  degree of  $p(x)$ , always at  $y = \frac{a}{b}$  where  $a$  and  $b$  are coefficients of the largest degree terms.
- c: if the degree of  $q(x) <$  degree of  $p(x)$ , there is no horizontal asymptote

Sketch the graph of the rational function. As sketching aids, use zeros, y-intercepts, vertical asymptotes, horizontal asymptotes, and symmetry.



Sketch the graph of the rational function. As sketching aids, use zeros, y-intercepts, vertical asymptotes, horizontal asymptotes, and symmetry.

