

Function: \_\_\_\_\_

1.  $f'(x) =$  \_\_\_\_\_  $f''(x) =$  \_\_\_\_\_

2. Relative extreme points: \_\_\_\_\_

2) Set  $f'(x) = 0$  and solve for the  $x$ 's.  
 Use  $f(x)$  to find the  $y$ -values.  
 Plot the points and draw horizontal lines.  
 If  $f''(x) > 0$  draw a concave up arc.  
 If  $f''(x) < 0$  draw a concave down arc.  
 If  $f''(x) = 0$  check  $f'(x)$  for close-by points on either side to determine if the point is a max or min. For close-by points, do not pass by critical values for  $f'(x)$  or  $f''(x)$ .  
 Also see below for inflection points.

3. Inflection points: \_\_\_\_\_

2) Set  $f''(x) = 0$  and solve for the  $x$ 's.  
 For each point, check  $f''(x)$  for close-by points on either side. If concavity changes, then the point is an inflection point. For close-by points, do not pass by critical values for  $f'(x)$  or  $f''(x)$ .  
 For the "good points", use  $f(x)$  to find the  $y$ -values.  
 Plot the points and draw squiggles through them.

4. Other duties:

Find the  $y$ -intercept \_\_\_\_\_

Let  $x = 0$ .

Find the  $x$ -intercept(s) \_\_\_\_\_

Let  $y = f(x) = 0$  and solve.

Find the Domain \_\_\_\_\_

Check denominator for 0 and check radicands for  $\leq 0$ .

Draw the Vertical asymptote(s) if any \_\_\_\_\_

Set denominator = 0 and solve. Then  $x = a_1, x = a_2, \dots$  are vertical lines.

Draw the Horizontal asymptote if there is one \_\_\_\_\_

$\text{Deg}(\text{numerator}) < \text{Deg}(\text{denominator})$   $y = 0$  or  $\text{Deg}(\text{numerator}) = \text{Deg}(\text{denominator})$   $y = a/b$ .

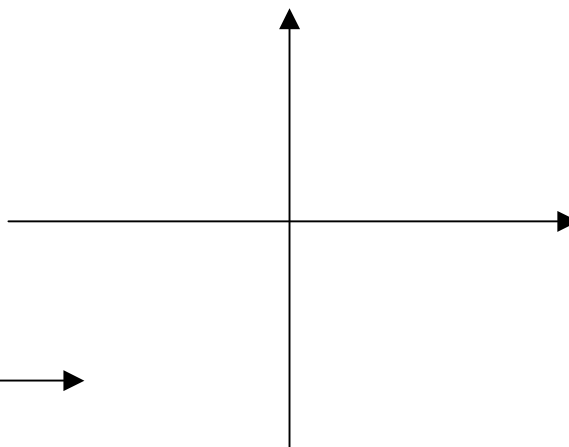
If there is a horizontal asymptote, there will not be a slant

Find the Slant/Oblique asymptote if there is one \_\_\_\_\_

$\text{Deg}(\text{numerator}) = \text{Deg}(\text{denominator} + 1)$ . Long divide and set quotient equal to  $y$  to get  $y = mx + b$  (a slanted line). Ignore the remainder.

If there is a slant asymptote, there will not be a horizontal

5. Complete the sketch:



Critical numbers for  $f'$  and  $f''$  \_\_\_\_\_