MAC 1140
LA sessions

Week 5

1. Find the domain of the following rational functions

a) $f(x)=\dfrac{2x^2+4x-5}{x^2+x-1}$

b) $f(x)=\dfrac{-x^3+2x^2+5x-1}{x^3-2x^2-2x+4}$

2. Find vertical asymptotes of the following rational functions

a) $f(x)=\dfrac{3x-2}{x^2-2x-1}$

b) $f(x)=\dfrac{2x^2-x-15}{x^3-8}$

c) $f(x)=\dfrac{x^2-4x}{x^2-2x-8}$

3. Find the horizontal/oblique asymptotes of the following rational functions

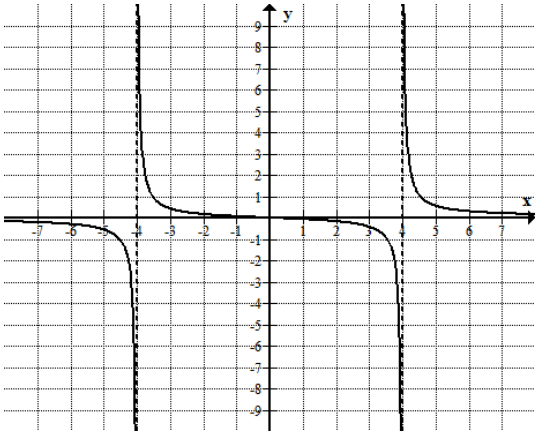
a) $f(x)=\dfrac{2x^2+4x-5}{x^2+x-1}$

b) $f(x)=\dfrac{3x^2-2x+4}{x^3-5x^2+2x+7}$

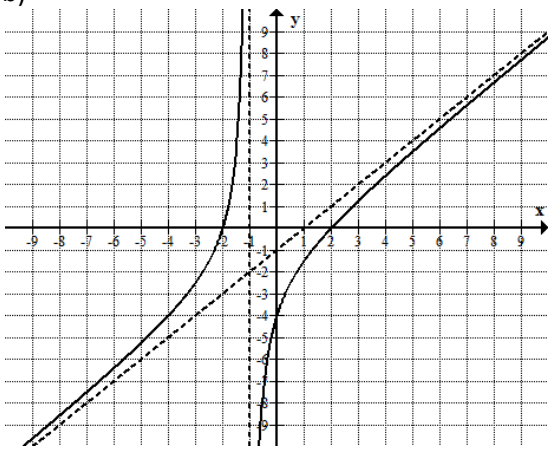
c) $f(x)=\dfrac{x^3-5x^2+2x+7}{x^2-2x+4}$

4. Write the equations of the asymptotes of the graph given below.

a)

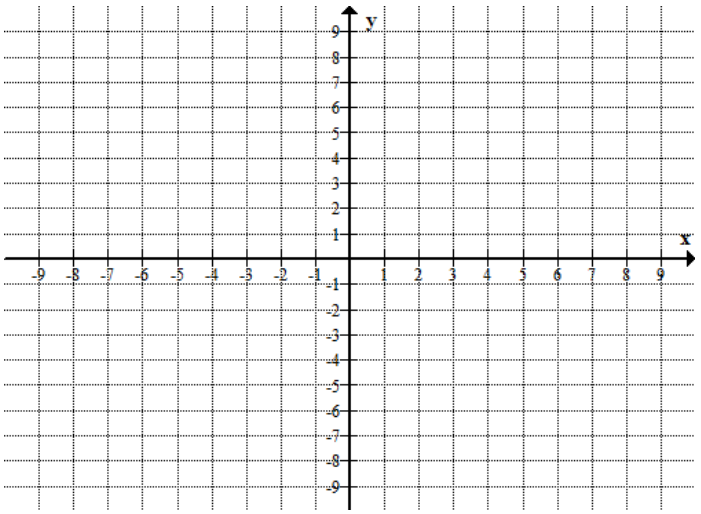


b)

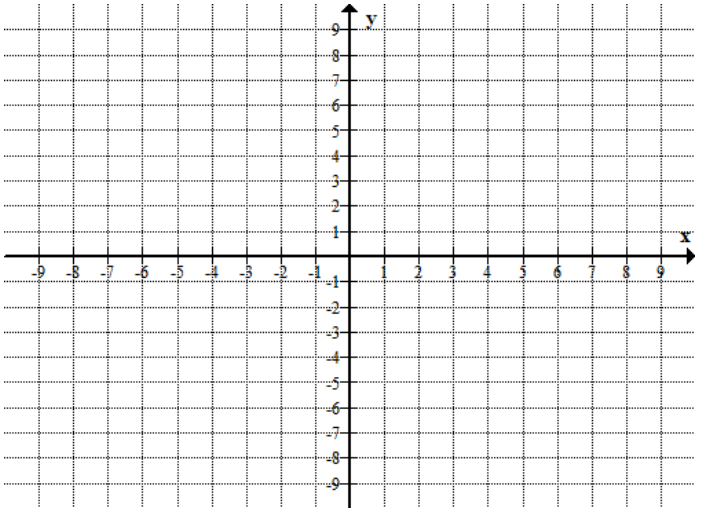


5. Draw the graph of a function with given properties

a) domain= {x|x≠ -2, 0, 3}; vertical asymptotes are x = -2, x= 0, x= 3; horizontal asymptote is y = -1; f(x)>0 only for x in (-1,0) ∪(0,2)

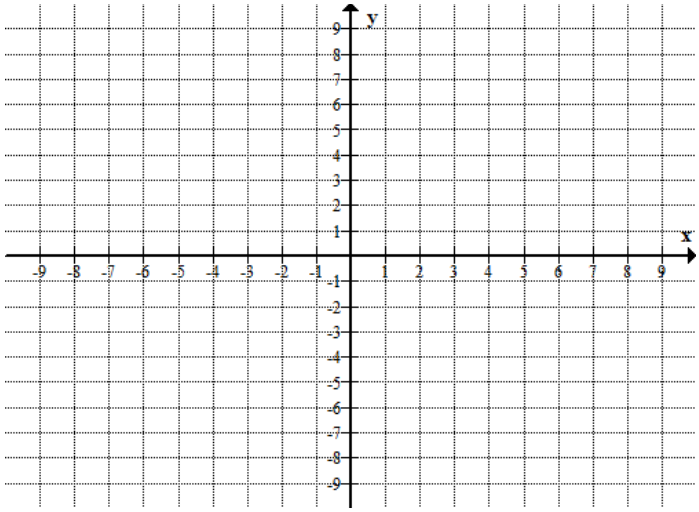


b) domain = {x|x≠ -2, 3}; vertical asymptote is x = -2; oblique asymptote y -=x+2; f has no x- intercept.

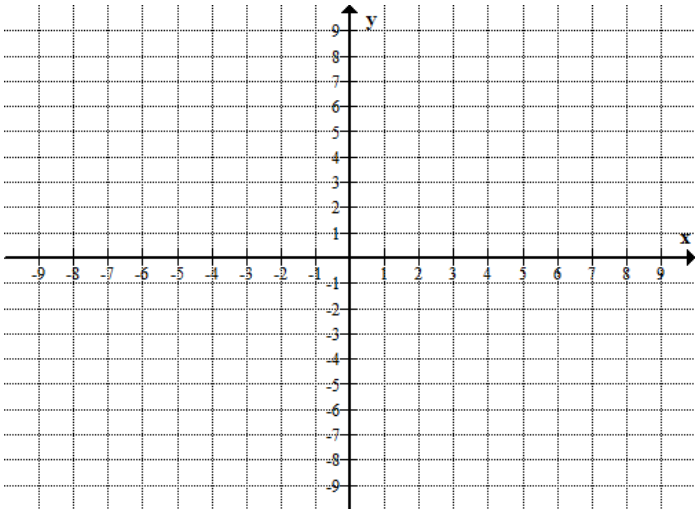


6. Sketch the graph of the following functions by finding the domain, intercepts, asymptotes, examining the sign of the function in the domain and finding the points of intersection, if any, of the graph and the horizontal/oblique asymptote.

a) $f(x) = \dfrac{2x^2}{x^2-1}$



b) $f(x) = \dfrac{x^3}{x^2 - 1}$



c) $f(x) = \dfrac{x - 2}{x^2 - 4}$