Name: _____

1. **[2 points]** Find the horizontal and vertical asymptotes of the given function.

   $g(x) = \dfrac{x+2}{x^2+x-2}$

2. **[4 parts, 2 points each]** Let $f(x) = (x^2-1)^2$. Note that because f is a polynomial, its domain is all real numbers and it does not have any asymptotes. You may find it useful to know that $\sqrt{\frac{1}{3}} \approx 0.577$.

   (a) Find the y and x intercepts of f.

(b) Recall $f(x) = (x^2 - 1)^2$. Compute the sign chart of f'. Use it to find the intervals of increase/decrease and relative extrema.

Intervals of increase (if any):	
Intervals of decrease (if any):	
Relative maxima (if any):	
Relative minima (if any):	

(c) Compute the sign chart of f''. Use it to find the concavity of f and inflection points.

Concave up intervals (if any):	
Concave down intervals (if any):	
Inflection points (if any):	

(d) Using parts (a)-(c), sketch the graph of $f(x) = (x^2 - 1)^2$ below.