**MAT 171 Section 3.5 Homework** **Name:**_____

**Find the domain of each rational function**

1. $f(x) = \dfrac{5x}{x-4}$

2. $h(x) = \dfrac{x+7}{x^2-49}$

**Find teh vertical asymptotes, if they exist, and the values of $x$ corresponding to holes, if any, of the graph of each rational function.**

3. $f(x) = \dfrac{x}{x+4}$

4. $r(x) = \dfrac{x}{x^2+4}$

**Find the horizontal asymptote, if it exists, of the given rational functions.**

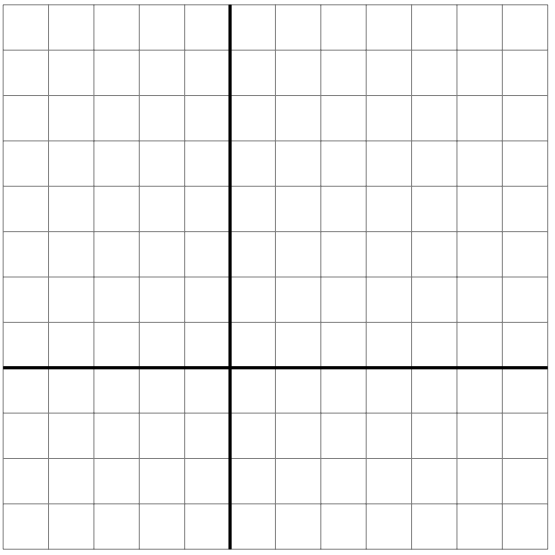
5. $f(x) = \dfrac{12x}{3x^2 + 1}$

6. $g(x) = \dfrac{12x^2}{3x^2 + 1}$

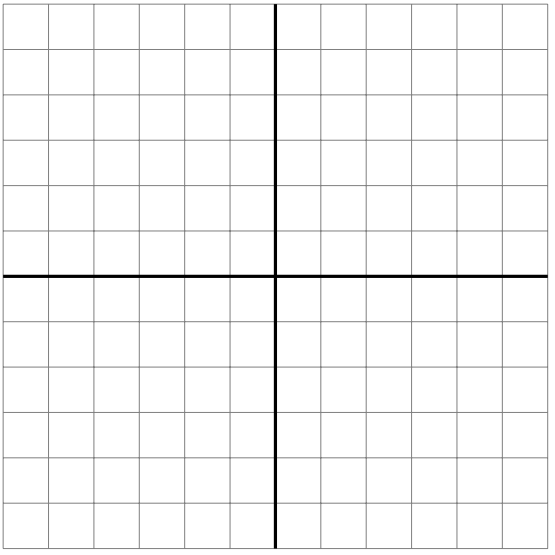
7. $h(x) = \dfrac{12x^3}{3x^2 + 1}$

**For the following problems, find any vertical asymptotes, horizontal asymptotes, x-intercepts, and/or y-intercepts. Then graph the function.**

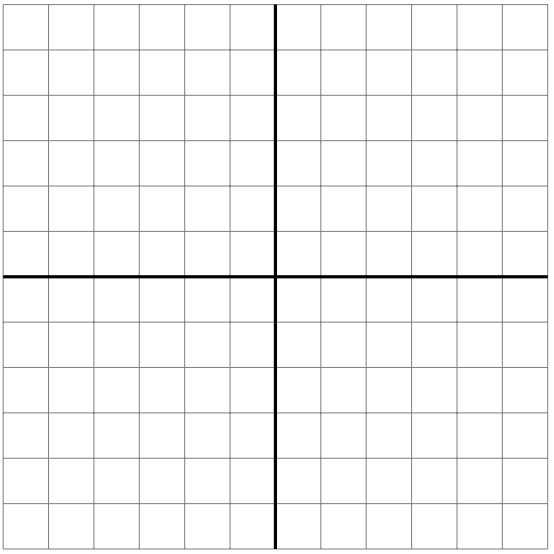
8. $f(x) = \dfrac{4x}{x-2}$



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



10. $f(x) = -\dfrac{1}{x^2 - 4}$



11. $f(x) = \dfrac{x + 2}{x^2 + x - 6}$