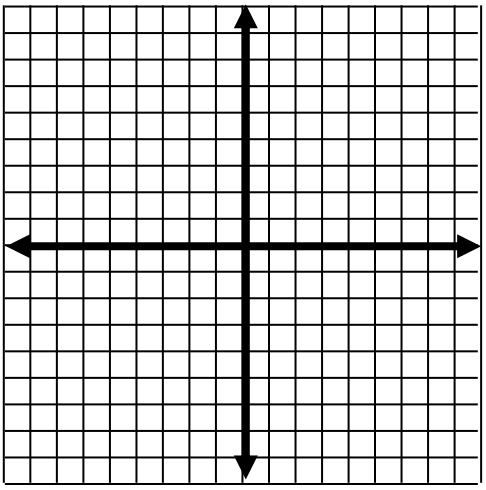
Review for Unit 2

Solutions will be at mskmath.com
If you need more examples, finish your online quiz (or redo it!) and homework.

1. $f(x)=\dfrac{x+5}{x^2+3x-10}$



Horizontal asymptote: _____

Removable discontinuity (hole):_____

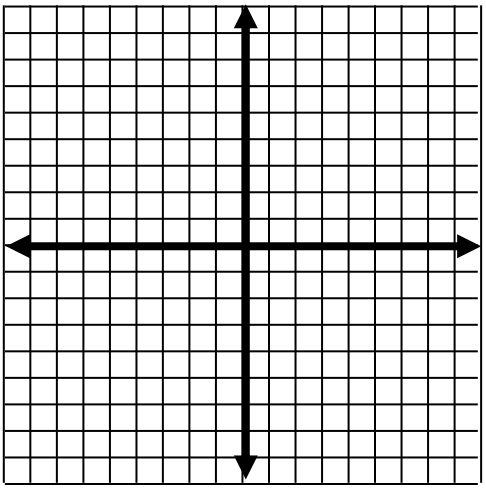
Vertical asymptote: _____

Slant asymptote: _____

x-intercept: _____

y-intercept: _____

2. $g(x)=\dfrac{4x^2-1}{x^2-9}$



Horizontal asymptote: _____

Removable discontinuity (hole):_____

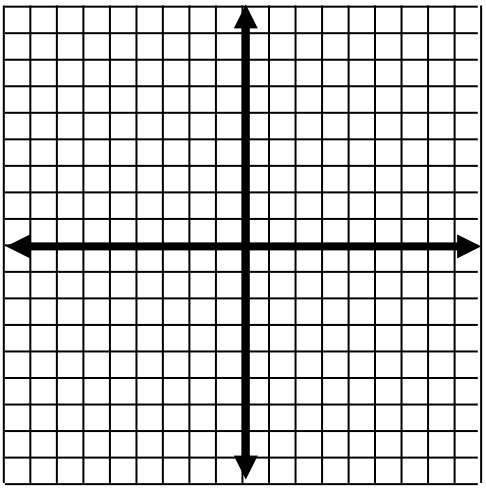
Vertical asymptote: _____

Slant asymptote: _____

x-intercept: _____

y-intercept: _____

3. $h(x)=\dfrac{\left(x^3-25x\right)}{\left(x^2-4x-21\right)}$



Horizontal asymptote: _____

Removable discontinuity (hole):_____

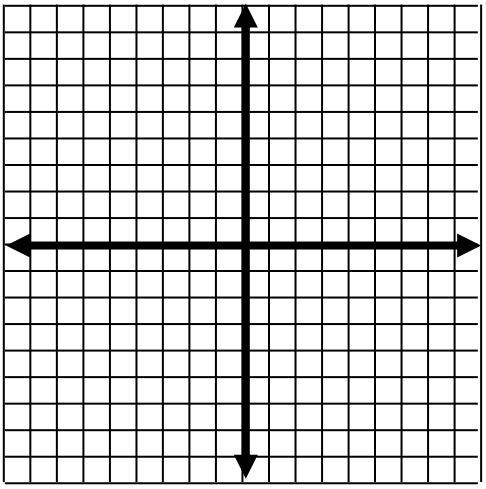
Vertical asymptote: _____

Slant asymptote: _____

x-intercept: _____

y-intercept: _____

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



Horizontal asymptote: _____

Removable discontinuity (hole):_____

Vertical asymptote: _____

Slant asymptote: _____

x-intercept: _____

y-intercept: _____

Solve the inequality. Find exact solutions when possible. If you need more practice, look at the evens from the solving inequalities homework.

5. $\dfrac{2}{x+3}+2\le 3$ 6. $x^3-2x^2-3x+10<4x-4$ 7. $4x^4-17x^2+4\ge 0$ 8. $\dfrac{x+3}{x^2-2x-8}\ge 0$

9. Is it possible to have a slant and a horizontal asymptote in the same graph? How do you know a rational equation will have a slant asymptote?

10. What is the only type of asymptote that cannot be crossed?

11. Given the following functions, what are the horizontal asymptotes, if they exist?

a) $\dfrac{x^2+2}{2x^2-3}$ _____ b) $\dfrac{x}{x^3-2x+1}$ _____ c) $\dfrac{x^3-2x+4}{x-1}$ _____

12. Let $f(x)=-3x+7$ and $g(x)=2x^2-8$

a. Find $f(g(x))$ b. Find $g\circ f(x)$ c. Are these function compositions commutative?

13. If $f(x)=3x+5$ and $g(x)=x^2$, $f\circ g(3)$

14. If $f(x)=\dfrac{\sqrt{x-1}}{1+\sqrt{x-1}}$, write two functions g(x) and h(x) such that g(h(x))=f(x).

15. If $f(x)=\sqrt{\dfrac{x^3}{2}}$, write two functions g(x) and h(x) such that g(h(x))=f(x).

16. Verify if the following sets of functions are inverses of one another

a. $g(x)=4-\dfrac{3}{2}x$, $f(x)=\dfrac{1}{2}x+\dfrac{3}{2}$

b. $g(x)=-\dfrac{2}{x}-1$, $f(x)=-\dfrac{2}{x+1}$

17. Find the inverse of each function. State the domain of $f^{-1}(x)$

a. $f(x)=\sqrt[3]{x}-3$ b. $f(x)=-4x+1$ c. $f(x)=-x^2-2$ for $x\ge 0$

18. How do the range of the function of f(x) and the domain of $f^{-1}(x)$ compare?

You got this!!!!