Calculus (Review) **Name**_____

Solve each of the inequalities

#1 Solve the inequality, be sure answer is in interval notation.

$$\frac{(3x+10)}{(x-3)(x+7)} \geq 0$$

#2 Solve the inequality, be sure answer is in interval notation.

$$\frac{k^2+2k-8}{k^2-10k+21} \leq 0$$

Functions for problems 3 and 4 $f(x) = 3x^2 + x - 2$ and $g(x) = -2x^2 + 3x - 1$ and $h(x) = 3x + 1$

#3 Find and simplify g (f (h (0)))

#4 Find and simplify f(g(−3))

#5 Find and simplify h(g (h(−3)))

#6 Identify the center and the radius.

a) $x^2 + y^2 - 4x + 2y - 31 = 0$

b) $x^2 + y^2 + 6x - 10y - 6 = 0$

7 Solve the systems.

a)
$$3x + 6y - 6z = 9$$
$$2x - 5y + 4z = 6$$
$$-x + 16y + 14z = -3$$

b)
$$2.5x + y - z = -6$$
$$-3.5y + 2.5z = 2.5$$
$$5x + 4y - 2z = -12$$

c)
$$x + y - 2z = -2$$
$$2x - 3y + z = 1$$
$$2x + y - 3z = -2$$

#8 Find the equation of the circle that contains these points.

(- 8 , - 4)
(- 7 , - 5)
(- 3 , 1)

9 Graph and state the domain and range using **interval notation.**

a) $y = |2(x - 4)^2 - 1|$

b) $y = \dfrac{x^2 - 9}{x - 3}$

#11 Write each of the following in standard H , K forms identify characteristics of each

a. $4x^2 + 4y^2 - 4x + 8y = 11$

b. $9x^2 + 16y^2 - 18x - 64y - 71 = 0$

c. $3x^2 - 6x - 6y + 10 = 0$

#12 Solve

a. $3|4x + 5|^2 - 10|4x + 5| = -8$

b. $3|3x - 1|^2 - 5|3x - 1| = 2$

#13. Find the area of of the triangle with vertices at (-6 , 5), (-2 , -3), and (4 , 7)

#14. 7) If $f(x) = 2x + 4$, $g(x) = \sqrt{x^2 - 3} + 1$, $h(x) = x^2 + 9$

a. find $f(3) + g(\sqrt{3}) + h(0)$

b. find $f(f(4))$

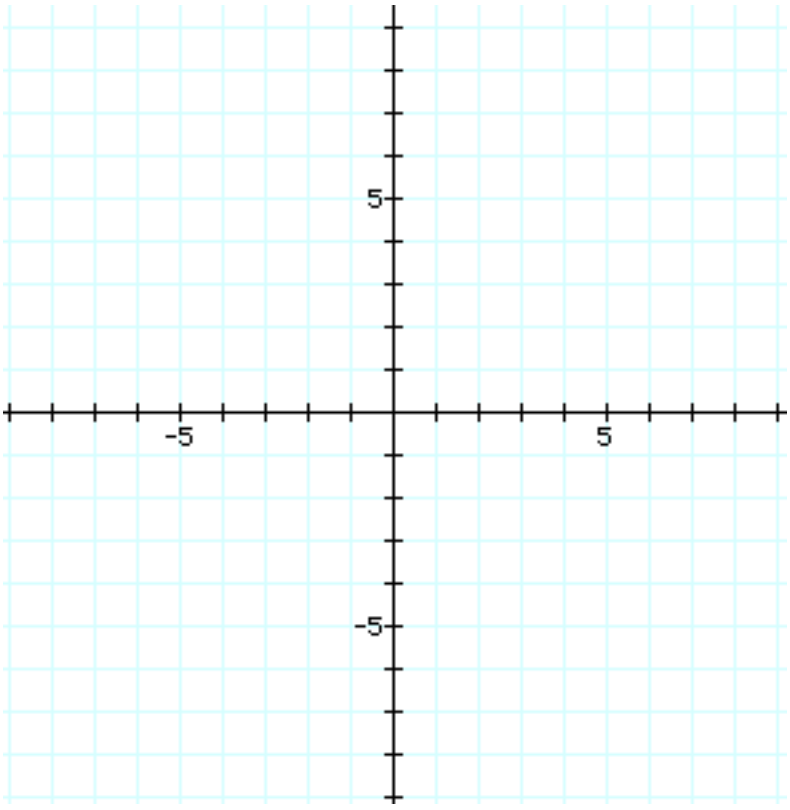
c. find $(g(f(h(1)))$

#15. Given the function $g(x) = \frac{3x}{x-6} + 9$, show what g (g (x)) would equal in simplist form.

Graph and identify zeroes, all asypmtotes, and perform a sign check, remember to check extreme values.

16. $y = \dfrac{3x^2 + 7x - 6}{x^2 - 4}$

graph



zeroes _____

vertical asymptotes _____

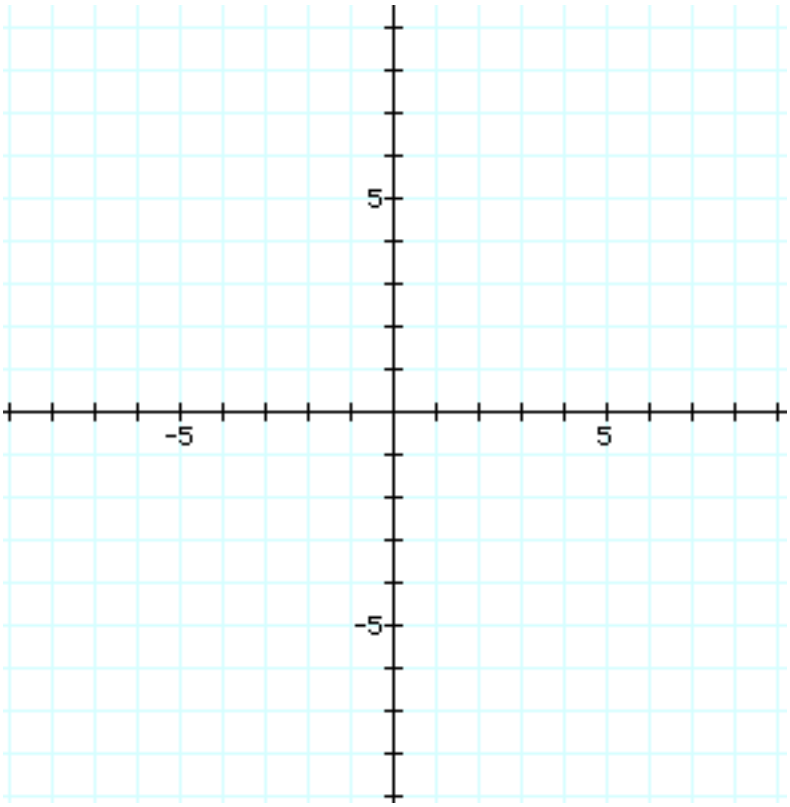
horizontal asymptotes _____

sign check ← – →

Graph and identify zeroes, all asypmtotes, and perform a sign check.

17. $\dfrac{x^2-1}{x^2-2x-8}$

graph



zeroes _____

vertical asymptotes _____

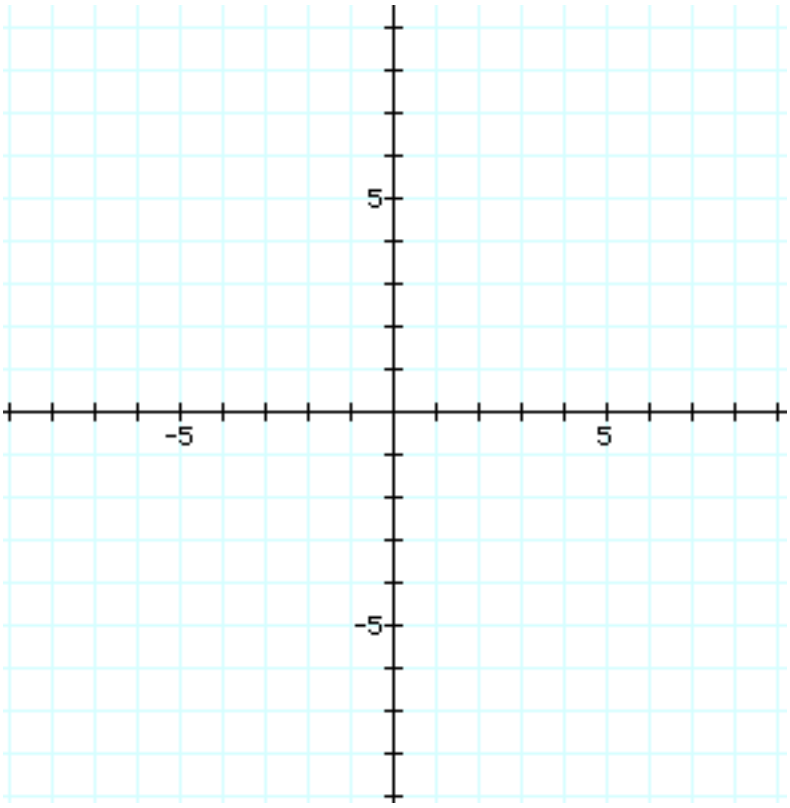
horizontal asymptotes _____

sign check ← – →

Graph and identify zeroes, all asypmtotes, and perform a sign check.

18. $\dfrac{2x^2-8}{x^2-25}$

graph



zeroes _____

vertical asymptotes _____

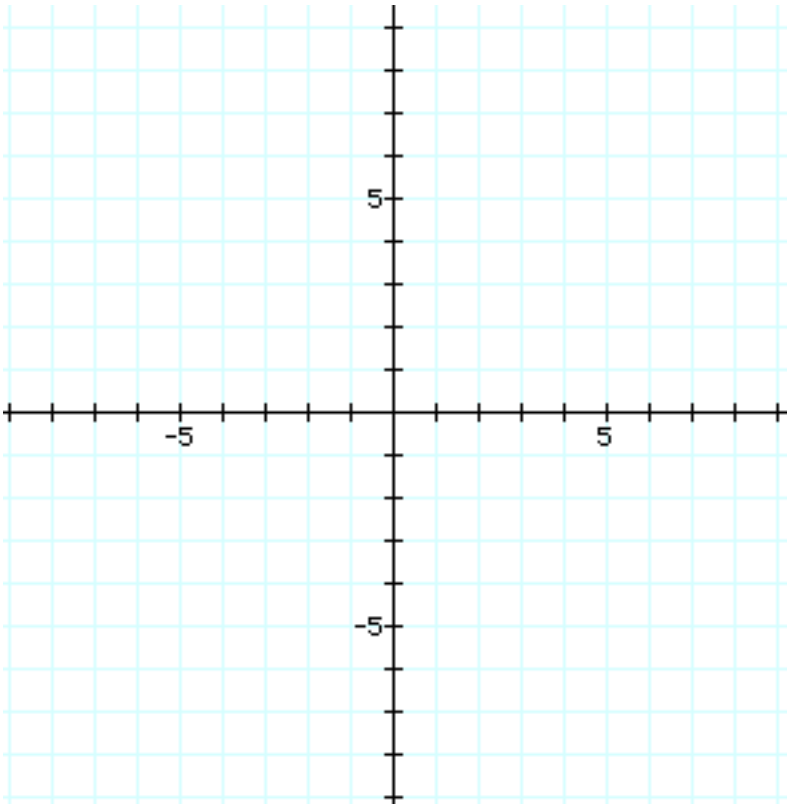
horizontal asymptotes _____

sign check ← – →

Graph and identify zeroes, all asypmtotes, and perform a sign check.

19. $\dfrac{7x-7}{x^2-x-12}$

graph



zeroes _____

vertical asymptotes _____

horizontal asymptotes _____

sign check ← – →