Calc H Summer Assignment

Name___________________________________ Period_______________________

Simplify using only positive exponents.

1. \(-3^{-x}\)  
2. \((16x^2y)^{3/4}\)

Find the domain of the following functions. Make sure to use interval notation (ex: \([0, 3)\)).

3. \(y = \frac{x^2 - 4}{2x + 4}\)  
4. \(y = \frac{x^2 - 5x - 6}{x^2 - 3x - 18}\)

5. \(y = \frac{x}{\cos x}\)

Describe, in words, the transformations that would take place to \(f(x)\) in each of the following.

6. \(f(x) - 4\)  
7. \(f(x - 4)\)

Solve each equation by factoring, graphing, or using the quadratic formula.

8. \(7x^2 - 3x = 0\)  
9. \(x^4 - 9x^2 + 8 = 0\)

Find the equations of all vertical \((x = ?)\) and horizontal \((y = ?)\) asymptotes (if they exist).

10. \(y = \frac{x}{x - 3}\)  
11. \(y = \frac{x + 4}{x^2 - 1}\)

Simplify the following.
12. \( \frac{x}{x-\frac{1}{2}} \)

13. \( \frac{x-\frac{1}{x}}{x+\frac{1}{x}} \)

**Answer the following questions over a variety of topics.**

14. Let \( f \) be a linear function where \( f(2) = -5 \) and \( f(-3) = 1 \). Find \( f(x) \).

15. Find an equation for the line, in point-slope form, that contains \((5,1)\) and is perpendicular to \(6x - 3y = 2\).

16. If \( g(x) = \frac{x}{x+3} \), find \( g^{-1}(x) \) (the inverse of \( g \)).

17. Evaluate the following.
   
a) \( \sin \left( \frac{7\pi}{6} \right) \)  
b) \( \csc(60^\circ) \)  
c) \( \cos(120^\circ) \)  
d) \( \sec\left( -\frac{2\pi}{3} \right) \)  
e) \( \tan \left( \frac{\pi}{2} \right) \)  
f) \( \cot(-135^\circ) \)
If \( f(x) = x^2 \), \( g(x) = 2x - 1 \), and \( h(x) = 2^x \), find the following.

18. \( f(g(2)) \)

19. \( g(f(2)) \)

20. \( f(h(-1)) \)

21. \( g\left(f\left(h\left(\frac{1}{2}\right)\right)\right) \)