## MATH 251 (PHILLIPS) MIDTERM 0 EXTRA PROBLEM LIST SET 1

1. Simplify the following expression as much as possible. If no simplification is possible, write "not possible":  $\frac{\sin(7x) + 7}{\sin(7x) - 7}$ 

2. Simplify completely (for y > 0):  $\frac{\left(\frac{2}{\sqrt{y}}\right)}{\left(\frac{y^{1/2}}{2}\right)}$ 

3. Find all real solutions to the equation  $\frac{e^{-5x}}{x^2} = 0$ . If no real solution exists, write "no solution".

4. Let g(x) = 7 - 4x. Evaluate the expression  $\frac{g(5+h) - g(5)}{h}$ , and simplify it as much as possible.

5. Write as a single fraction, and simplify as much as possible:  $\frac{3}{x+4} - \frac{1}{x-5}$ 

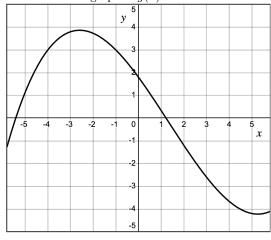
6. Find all real solutions to the equation  $\frac{8}{x} - x = -2$ . If no real solution exists, write "no solution".

7. Find all real solutions to the equation  $\ln(7 - 2x) + 2 = 0$ . If no real solution exists, write "no solution".

8. Find the domain of the function  $r(x) = (-x)^{-1/4}$ .

9. Multiply out:  $(w-1)(w^2 - 4w - 3)$ .

10. The graph of a function y = g(x) is sketched below (at the left). For which values of x shown on the graph is g(x) > 3?



2