Mth 111 Lab #4 *Franz Helfenstein* **NAME**

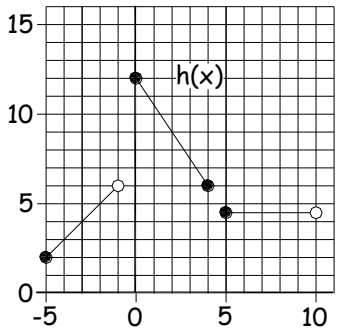
This lab is intended to review some of the things we have done so far. You are encouraged to work together. As necessary, attach additional paper but put your final answer on this paper. Your work will be graded on completeness, neatness, accuracy and punctuality. You must show your work! (10 pts)

1) Find the equation of the line that passes through (12, -8) and is perpendicular to $16x - 32y = -4$. Check your answer by graphing both lines in a squared window.

2) Solve for y: $\frac{2x - 5y}{3} + 2 = 12 - \frac{3y - 8x}{2}$

3) Write the algebraic form for h(x).
Be sure to include the domain restrictions.

$h(x) = \begin{cases} \\ \\ \\ \end{cases}$



4) Give the domain for each function:

(a) $y = \frac{x + 1}{x - 1}$ (b) $y = \sqrt{x + 1}$ (c) $y = ax^2 + bx + c$ (d) $y = \sqrt{x^2 + 1}$

5) $f(x) = \sqrt{x + 6}$; $g(x) = x^2 + 1$; $h(x) = \frac{1}{x} + 1$ Simplify the following:

(a) $f(x - 2) =$	(b) $g(f(3)) =$	(c) $(g \cdot - h)(x) =$	(d) $f^2(x) + 4 =$

6) For $f(x) = x^2 + 1$, Simplify $4f(2x - 3) + 5$

7) Compute and simplify the difference quotient for $f(x) = x^2 + 4x$.

8) $f(x) = 5 + 4 \cdot 2^{3x+2}$ (a) $f(0) =$ (b) $f(-2) =$ (c) $f(x - 1) =$

9) Find the function $y = A\,b^x + C$… Check your answer by graphing!

(a) With a horizontal asymptote at $y = -4$, a y-intercept of 8 and passing through (2, -1)

(b) With a horizontal asymptote at $y = 36$, a y-intercept of 4 and passing through (5, 35)

10) Combine factors and simplify to exponential form with all positive exponents.

(a) $a^3\,b^4\,a^5\,b^{-6} =$ (b) $\dfrac{(2x^3)^2}{2^5\,x^4} =$ (c) $\sqrt{64x^7} =$

BONUS

$f(x) = x^2 - 3$, $g(x) = \dfrac{1}{x - 13}$ Simplify the following: $[f(x) + 2x]\,g^2(x + 12) =$