

Name _____

Homework 1
Review

1. (2ea) Consider the function $f(x) = x^2 + 4x$. Compute the following quantities and give your answer to each as a polynomial in standard form ($a_n x^n + a_{n-1} x^{n-1} + \cdots + a_0$)

(a) $f(x + 1)$

(b) $f(x + h)$

(c) $f(x + h) - f(x - h)$

2. (3) Given the function $g(x) = x^3 - 6x + 8$, compute (and simplify) $g(x + 2)$.

3. (3) Let $f(x) = \frac{4}{x}$. Determine (and simplify) the expression $f(x + h) - f(x)$. Give your answer as a single fraction.

4. (4) Given the function $f(x) = 3x^2 - 5x + 9$, determine and simplify $\frac{f(x+h) - f(x)}{h}$.

5. (4) Algebraically determine $\lim_{h \rightarrow 0} \frac{(2+h)^3 - 8}{h}$.