Composition of Functions/Inverse Functions

<u>Directions:</u> In 1-2, using $f(x) = x + 5$ and $g(x) = 4x$, evaluate each composition.

1. $g(f(2))$ 2. $f(g(-1))$

<u>Directions:</u> In 3-4, for the given functions $f(x)$ and $g(x)$, find, in each case, the rule of the composition $(f \circ g)(x) = f(g(x))$.

3. $f(x) = x - 10$; $g(x) = 4x$ 4. $f(x) = 4 - x^2$; $g(x) = x - 2$

Directions:

a)   Find the original functions domain and range
b)   Find the original functions inverse
c)   Find the domain and range of the inverse function

5. $f(x) = 4 - x^2$ 6. $f(x) = \sqrt{4 - x}$

Directions: Graph the piecewise function

$$f(x) = \begin{cases} x + 2 & x < 1 \\ x^2 + 1 & x \geq 1 \end{cases}$$