Precalculus Review 2, 09/08/14

1. Find a formula for the function $f(x)$ whose graph consists of all (x, y) such that
$$x = \frac{1+y}{1-y}.$$
What is the domain of f?

2. Suppose $g(x)$ is defined such that $g(x+1) = x^3$. What is $g(0)$?

3. Let $f(x) = x - 4$ and let
$$g(x) = \begin{cases} \frac{x^2-16}{x+4} & \text{if } x \neq 4 \\ k & \text{if } x = -4 \end{cases}$$
Determine k such that $f(x) = g(x)$ for all x.

4. Let $f(x) = \sin^2(x)$. Why does $f(x)$ not have an inverse? What is an interval on which $f(x)$ has an inverse? What is the inverse?

5. Describe the set of points whose distance to $(6, 2)$ is the same as the distance to $(0, 0)$. What shape does it have?

6. One of the following statements is right, and one is wrong. Which is which?

$$\arcsin(\sin q) = q$$

$$\sin(\arcsin q) = q$$