MAC 1147 - Quiz 4 **Name:**

For full credit, you must show all work and circle your final answer.

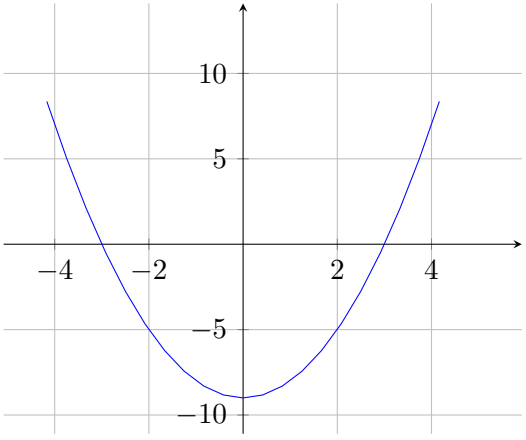
1 Compute $f \circ g$:
$f(x) = x^2 + 3x - 1$ and $g(x) = x + 3$

$(f \circ g)(x)$
$= f(g(x))$
$= f(x + 3)$
$= (x + 3)^2 + 3(x + 3) - 1$
$= (x^2 + 6x + 9) + (3x + 9) - 1$
$= x^2 + 9x + 17$

2 Find the inverse of $f(x)$, assume $x > -4$:
$f(x) = x^2 - 4$

First switch x and y, and then solve for y:
$y = x^2 - 4$
$\rightarrow x = y^2 - 4$
$\rightarrow y^2 = x + 4$
$\rightarrow y = \sqrt{x + 4}$
So the inverse is: $f^-1(x) = \sqrt{x + 4}$
You can check: $(f \circ f^-1)(x) = f(f^-1(x)) = f(\sqrt{x + 4}) = (\sqrt{x + 4})^2 - 4 = x + 4 - 4 = x$

3 Sketch the graph for f(x) and determine if it is odd, even or neither:
$f(x) = x^2 - 9$



$f(-x) = (-x)^2 - 9 = x^2 - 9 = f(x)$, so the function is even. In the graph you can see that the function is reflected across the y axis, which also means it is even.