

## Quiz 6

Math 1A, section 103

March 6, 2014

1. Use the Chain Rule to prove the following:

(a) The derivative of an even function is an odd function.

(b) The derivative of an odd function is an even function.

a) Let  $f(x)$  be an even function,  
so that  $f(x) = f(-x)$  for all  $x$ .

Then  $f'(x) = (f(-x))'$   
 $= -f'(-x)$  by the chain rule,  
so  $f'$  is odd.

b) Let  $f(x)$  be an odd function,  
so that  $f(x) = -f(-x)$  for all  $x$ .

Then  $f'(x) = (-f(-x))'$   
 $= f'(-x)$  by the chain rule,  
so  $f'$  is even.