

Student name: \_\_\_\_\_

Number: \_\_\_\_\_

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Remember

- a)  $f$  is an even function if  $f(-x) = f(x)$  for all  $x \in \mathbb{R}$
- b)  $f$  is an odd function if  $f(-x) = -f(x)$  for all  $x \in \mathbb{R}$

1) If  $f(x) = x^2 - 12x + 21$ ,  $x \leq 6$ , find  $(f^{-1})'(10)$ .

2) Prove that if  $f: \mathbb{R} \rightarrow \mathbb{R}$  is an even function and has a derivative at every point, then  $f'$  is an odd function.

3) Write two equivalent conditions for Riemann integrable functions  
If  $f: [a, b] \rightarrow \mathbb{R}$  is a bounded function, the following are equivalent

1)  $f \in \mathcal{R}[a, b]$

2) \_\_\_\_\_

3) \_\_\_\_\_

4) Let  $f(x) = \begin{cases} 2 & 0 \leq x < 1 \\ 3 & x = 1 \\ 1 & 1 < x \leq 2 \end{cases}$ , show that  $f(x) \in \mathcal{R}[0, 2]$  and evaluate the integral