

AP Calculus Function Operations Review

Name: _____

Date: _____

- If $f(x) = x^2 - 4x + 1$, then $f(x - 2)$ is equal to:
- Which one of the following facts proves that the function f defined by $f(x) = |x|$ is *not* a one-to-one mapping?
 - $f(0) = 0$
 - $f(x^2) = x^2$
 - $f(1) = f(-1)$
 - $f(x) \geq 0$
- Let $f(x) = x + 2$ and $g(x) = x^2 - 2$ then $g(f(x)) = ?$
- If $g(x) = x^2 - x$, find $\frac{g(2+h) - g(2)}{h}$
- For $f(x) = x^2 + x$, find $\frac{f(a+h) - f(a)}{h}$.
- If $f(x) = x^2 - x + 2$, then $f[f(3)]$ equals:
- Given $f(x) = 7x + 2$, find $f^{-1}(x)$.
- If $f(x) = x^2 + 1$ and $g(f(x)) = \sqrt{x^2 + 1}$, then $f(g(2)) =$
- Suppose the function f satisfies
 - $f(3) = 5$
 - $f(x) = f(x - 1) - 2x$
 Then $f(1) + f(5)$ equals

- If

$$f(x) = \begin{cases} |x| & \text{if } x < 2 \\ |x - 4| & \text{if } x \geq 2 \end{cases}$$
 and

$$g(x) = \begin{cases} -2x + 3 & \text{if } x < 1 \\ 3x + 1 & \text{if } x \geq 1 \end{cases}$$
 then $(g \circ f)(-1) =$
- Let $g(x) = \begin{cases} |x| - 2 & \text{if } x \leq 0 \\ x - 3 & \text{if } 0 < x < 4 \\ 3 - x & \text{if } 4 \leq x \end{cases}$
 Find a number x such that $g(x) = -4$
- Given $f(x) = 7x + 2$, find $f^{-1}(x)$.
- Given $f(x) = \sqrt[3]{1-x}$, find $f^{-1}(x)$.
- If $f(x) = \frac{4}{3}x - 9$, what is $f^{-1}(-3)$?
- Find a domain for $f(x) = 3x^2 + 12x - 8$ on which it has an inverse. Explain why it is necessary to restrict the domain of the function.