Math11000 Section 3962 Quiz 20
Summer 2023, June 14

Name: [5 pt]

Problem 1: Let $f(x) = x^2 + 1$, $g(x) = x + 2$. Find $(f \circ g)(x)$. [5 pts]

Problem 2: Let $f(x) = 2x + 1$. Find the formula for inverse of f. [5 pts]

EXAMPLES

Ch9 Test #1

Find $(f \circ g)(x)$ and $(g \circ f)(x)$ if $f(x) = x + x^2$ and $g(x) = 2x + 1$

$(f\circ g)(x) = f(g(x)) = f(2x+1) = (2x+1) + (2x+1)^2$

$= 2x+1 + (2x)^2 + 1^2 + 2(2x)(1) = 2x+1+4x^2+1+4x$

$= 4x^2 + 6x + 2$.

$(g\circ f)(x) = g(f(x)) = g(x+x^2)$

$= 2(x+x^2)+1 = 2x^2+2x+1$

Find inverse of $f(x) = 3x+4$.

$y = 3x+4$ interchange x and y

$x = 3y+4 \Rightarrow x-4 = 3y \Rightarrow \frac{x-4}{3} = y \Rightarrow y = \frac{1}{3}x - \frac{4}{3}$

$\Rightarrow f^{-1}(x) = \frac{1}{3}x - \frac{4}{3}$