

Math 115 Quiz #3 No calculators - show all work 10/28/09

$$\text{Let } f(x) = \begin{cases} 3x-1, & x < -1 \\ 4, & -1 \leq x \leq 1 \\ x^2, & x > 1 \end{cases}$$

$$\text{Find } f\left(\frac{1}{2}\right) = 4, \text{ since } -1 \leq \frac{1}{2} \leq 1$$

$$\textcircled{2} \text{ Find the domain of } f(x) = \frac{1}{\sqrt{7x+4}}$$

Need $7x+4 > 0$, since $7x+4$ is under a $\sqrt{\quad}$ and in a denominator

$$\Rightarrow 7x > -4$$

$$x > -\frac{4}{7}$$

$$\boxed{\left(-\frac{4}{7}, \infty\right)}$$

$\textcircled{3}$ Given the graphs, calculate:

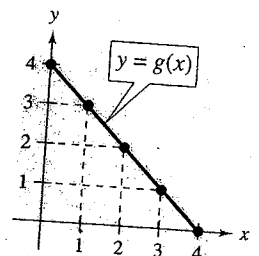
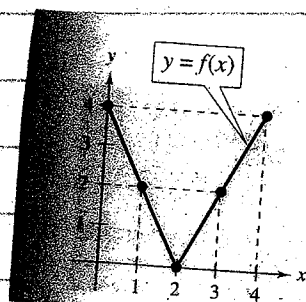
$$(f-g)(3) = f(3) - g(3) = 2 - 1 = 1$$

$$(fg)(1) = f(1) \cdot g(1) = 2 \cdot 3 = 6$$

$$(f \circ g)(4) = f(g(4)) = f(0) = 4$$

$$(g \circ f)(3) = g(f(3)) = g(2) = 2$$

$$(f \circ f)(3) = f(f(3)) = f(2) = 0$$



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$$\textcircled{1} \text{ Let } f(x) = \begin{cases} 3x-1, & x < -1 \\ 4, & -1 \leq x \leq 1 \\ x^2, & x > 1 \end{cases}$$

$$\text{Find } f\left(\frac{7}{2}\right) = \left(\frac{7}{2}\right)^2 = \frac{49}{4}, \text{ since } \frac{7}{2} > 1$$

$\textcircled{2}$ Find the domain of $f(x) = \frac{1}{\sqrt{-8x+3}}$

Need $-8x+3 > 0$, since it is under a $\sqrt{\quad}$ and in a denominator.

$$\Rightarrow -8x > -3$$

$$x < \frac{3}{8}$$

$$\boxed{(-\infty, \frac{3}{8})}$$

$\textcircled{3}$ Given the graphs, calculate:

$$(g \circ f)(4) = g(f(4)) = g(0) = 4$$

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