Honors Precalculus – Wilson **Name** KEY
Practice Quiz §§1.3-1.4 (no calculators) **Period** _____

1. Over what interval(s) is $f(x)=\frac{1}{x}$ decreasing? $(-\infty,0)\cup(0,\infty)$

2. Complete the following table:

$y=\text{int}\,x$	$y=\dfrac{1}{1+e^{-x}}$	$y=e^x$	
Neither	BOTH	BELOW	Bounded: above, below, both, neither
0	2	1	Number of horizontal asymptotes

3. Let $f(x)=\ln x$ and $g(x)=\frac{1}{x}$

a) $(g\circ f)(x)=$ $\boxed{\dfrac{1}{\ln x}}$

b) domain of $(g\circ f)(x)=$ $x>0$, $x\neq 1$ $\boxed{(0,1)\cup(1,\infty)}$

domain of ln $(0,\infty)$
$\longrightarrow x>0$

denom $\neq 0 \longrightarrow \ln x \neq 0$
$x\neq 1$

4. Use the table below to evaluate the following expressions:

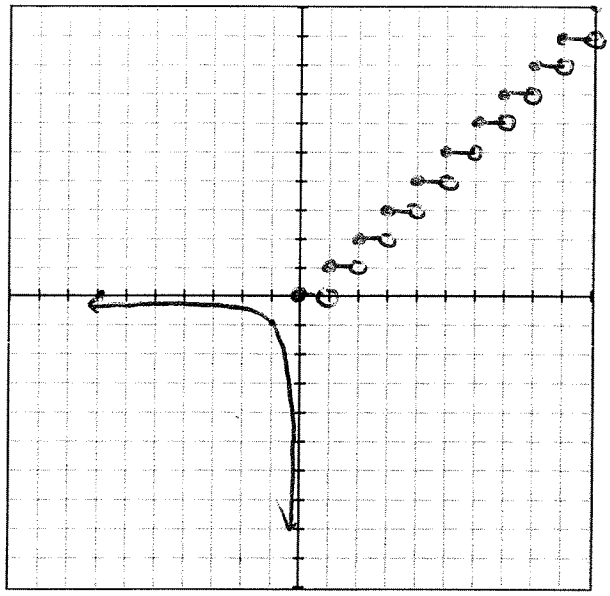
x	$f(x)$	$g(x)$
-1	2	3
0	0	2
1	1	1
2	0	-1
3	2	-1

a) $(f\circ g)(2)=$ $f(g(2))=f(-1)=\boxed{2}$

b) $(f-g)(3)=$ $f(3)-g(3)=2-(-1)$
$=\boxed{3}$

c) $(f\circ f)(3)=$ _____
$=f(f(3))$
$=f(2)$
$=\boxed{0}$

5. Use the graph grid below to graph the function $f(x)=\begin{cases} \dfrac{1}{x} & \text{if} \quad x<0 \\ \text{int}(x) & \text{if} \quad x\geq 0 \end{cases}$



6. Find functions $f(x)$ and $g(x)$ so that $f(g(x))=\dfrac{(x-3)^5+2}{9-(x-3)^3}$. Do not define either functions as simply x or $-x$.

$f(x)=$ $\dfrac{x^5+2}{9-x^3}$

$g(x)=$ $x-3$

answers may vary.