Notes

Review for Piecewise Quiz

Evaluate.

$$t(x)=\begin{cases} 2x-5 & x<2 \\ \dfrac{1}{x} & x\geq 2 \end{cases}$$

1) $t(1)$

$x=1 \quad x<2$

$t(x) = 2x-5$

$t(1) = 2(1)-5$

$= 2-5$

$t(1) = \boxed{-3}$

2) $t\left(\frac{5}{2}\right)$

$x=\frac{5}{2}=2\frac{1}{2}$

$x\geq 2$

$t(x)=\frac{1}{x}$

$t\left(\frac{5}{2}\right)=\frac{1}{\frac{5}{2}}$

$=1\cdot\frac{2}{5}$

$=\boxed{\frac{2}{5}}$

3) $t(0.25)$

$t\left(\frac{25}{100}\right)$

$t\left(\frac{1}{4}\right)$

$x=\frac{1}{4}$

$x<2$

$t(x)=2x-5$

$t\left(\frac{1}{4}\right)=2\left(\frac{1}{4}\right)-5$

$=\frac{2}{4}-5$

$=\frac{1}{2}-5$

$=-4\frac{1}{2}$

$t\left(\frac{1}{4}\right)=\boxed{-\frac{9}{2}}$

Evaluate.

$$m(x)=\begin{cases}\sqrt{1-x} & x<-1\\ \left|\frac{4}{5}x-3\right| & x>-1\end{cases}$$

4) $m(-1)$

$X=-1$

no solution

5) $m(1)$

$X=1$

$X>-1$

$m(x)=\left|\frac{4}{5}x-3\right|$

$m(1)=\left|\frac{4}{5}(1)-3\right|$

$=\left|\frac{4}{5}-\frac{3}{1}\right|$

$=\left|\frac{4}{5}-\frac{15}{5}\right|$

$=\left|-\frac{11}{5}\right|$

$m(1)=\boxed{\frac{11}{5}}$

6) $m(-8)$

$X=-8$

$X<-1$

$m(x)=\sqrt{1-x}$

$m(-8)=\sqrt{1-(-8)}$

$=\sqrt{1+8}$

$=\sqrt{9}$

$m(-8)=\boxed{3}$

Graph. State the domain and range in interval notation.

$$g(x)=\begin{cases} 2x-1 & x<-1 \\ 3 & x\geq -1 \end{cases}$$

$g(x)=2x-1$ $x<-1$ (less)

x	$2x-1$
-1	-3
-2	-5
-3	-7

↓

○ open

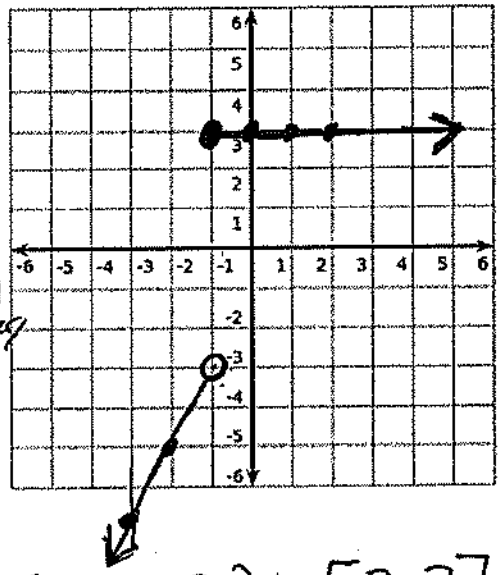
Horiz.

$g(x)=3$ $x\geq -1$ (greater =)

x	3
-1	3
0	3
1	3
2	3

↓

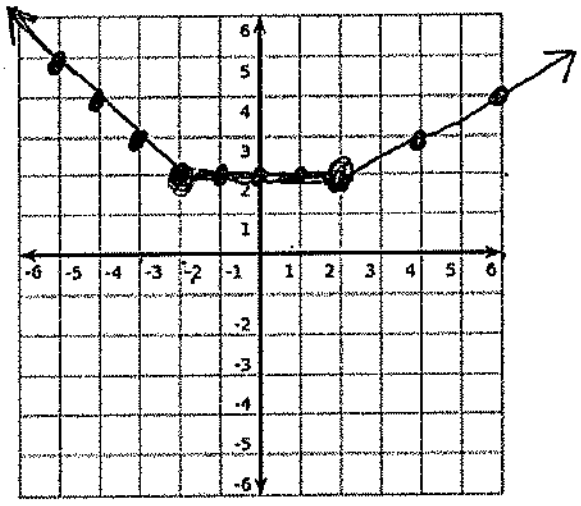
• closed



Domain $(-\infty, \infty)$ Range $(-\infty, -3) \cup [3, 3]$

Sketch. State the domain and range in set notation.

$$g(x)=\begin{cases} -x & x\le -2 \\ 2 & -2<x<2 \\ \frac{1}{2}x+1 & x\ge 2 \end{cases}$$



Domain $\{x \mid x \in R\}$ Range $\{y \mid y \ge 2\}$

$x \ge 2$

$g(x) = -x \quad x \le -2$ (less/=)

x	$-x$	
-2	2	• Closed
-3	3	
-4	4	
-5	5	
↓		

Horiz. $g(x) = 2 \quad -2 < x < 2$ (Btwn; open, open)

x	2	
-2	2	○ open
-1	2	
0	2	
1	2	
2	2	○ open

$g(x) = \frac{1}{2}x + 1$

x	$\frac{1}{2}x+1$	
2	2	• closed
4	3	
6	4	
↓		