数学作业纸

（科目：Cal ）

班级：CS01　姓名：[illegible]　编号：2020010869　第 1 页

Problem 1.1.19

Sol: $|x|<2 \Rightarrow -2<x<2$

Problem 1.1.22.

Sol: $|t+2|<1 \Rightarrow -1<t+2<1 \Rightarrow -3<t<-1$

Problem 1.1.27

Sol: $|3-\frac{1}{x}|<\frac{1}{2} \Rightarrow -\frac{1}{2}<3-\frac{1}{x}<\frac{1}{2} \Rightarrow -\frac{7}{2}<-\frac{1}{x}<-\frac{5}{2}$

$\Rightarrow \frac{5}{2}<\frac{1}{x}<\frac{7}{2} \Rightarrow \frac{2}{7}<x<\frac{2}{5}$

Problem 1.1.43

Sol. For $a<0$, we have $|-a|=-a\neq a$, and it is false.
and for $a\geq 0$, we have $|-a|=a$, so it is true.

Problem 1.1.44

Sol. For $x\leq 1$, we have $x-1\leq 0$, so that $|x-1|=1-x$ is true.
For $x>1$, $x-1>0$ and $|x-1|=x-1\neq 1-x$, and it is not the ans.
The solution of the equation is $x\leq 1$.

Problem 1.1.51.

Sol. For $a\geq 0$, LHS $=|-a|=a$, RHS $=|a|=a$
For $a<0$, LHS $=|-a|=-a$, RHS $=|a|=-a$.
We can see for any a, we have LHS = RHS. Q.E.D.

Problem 1.2.17.

Sol. We can see $y-1=-(x-(-1)) \Rightarrow x+y=0$ is the line we want.

Problem 1.2.18

Sol. With point-slope form we know $y-(-3)=\frac{1}{2}(x-2) \Rightarrow x-2y-8=0$ is the ans.

Problem. 1.2.19

Sol. From the two-point form we have $\frac{y-4}{5-4}=\frac{x-3}{-2-3} \Rightarrow x+5y-23=0$ is the ans.

Problem 1.2.31

Sol. Let $x=0$, we have $4y=12 \Rightarrow y=3$ is the y-intercepts of the line.
Let $y=0$, we have $3x=12 \Rightarrow x=4$ is the x-intercepts of the line.

数 学 作 业 纸

（科目：Cal ）

班级：CS01 姓名：方逸朗 编号：2020010869 第 2 页

Problem 1.2.32

Sol. Let $x=0$, we have $2y=-4 \Rightarrow y=-2$ is the y-intercepts of the line.

Let $y=0$, we have $x=-4$ is the x-intercepts of the line

Problem 1.3.1

Sol. The domain is $(-\infty,\infty)$, because $x^2 \geqslant 0$, so that $f(x)=1+x^2 \geqslant 1$, and the range is $[1,+\infty)$

Problem 1.3.2

Sol. The formula $y=\sqrt{x}$ give a real y-value only if $x \geqslant 0$, so that the domain is $[0,+\infty)$, and because of $y=\sqrt{x} \geqslant 0$, so $f(x)=1-\sqrt{x} \leqslant 1-0=1$, the range is $(-\infty,1]$

Problem 1.3.3

Sol The formula $y=\sqrt{x}$ domain is $x \geqslant 0$, and formula $y=\frac{1}{\sqrt{x}}$ domain is $\sqrt{x} \neq 0$ so that $F(t)=\frac{1}{\sqrt{t}}$, domain should be $(0,+\infty)$, and we know $\sqrt{t}>0$, so $F(t)>0$, and the range is $(0,+\infty)$

Problem 1.3.38

Sol. (a). Because of the triangle's hypotenuse is 2 units long, OB should be 1 unit long, and $B(0,1)$ $A(1,0)$ can ensure a line $AB: x+y=1$. we know P lie on AB, so that the y-coordinate of P should be $1-x$.

(b) $S = 2\cdot x\cdot(1-x)$, $x\in(0,1)$

(c) $R=2x(1-x) = -2(x-\frac{1}{2})^2+\frac{1}{2}$