MTH 166 Review Homework

1a. $2x-4(5x+1)=3x+17$

$2x-20x-4=3x+17$

$-18x-4=3x+17$

$-21=21x \Rightarrow \boxed{x=-1}$

b. $\frac{4}{x+2}+\frac{2}{x-4}=\frac{30}{x^2-2x-8}$ $\quad * (x+2)(x-4)$

$(x+2)(x-4)$

$4(x-4)+2(x+2)=30$

$4x-16+2x+4=30$

$6x-12=30$

$6x=42 \Rightarrow \boxed{x=7}$

c. $3x^2-7x+1=0$ $\quad x=\frac{7\pm\sqrt{49-12}}{2(3)}=\frac{7\pm\sqrt{37}}{6}$

d. $(x-3)^2-24=0$

$\sqrt{(x-3)^2}=\sqrt{24}=2\sqrt{6}$

$x-3=\pm 2\sqrt{6} \Rightarrow x=3\pm 2\sqrt{6}$

$+3 \quad +3$

e. $\sqrt{8-2x}-x=0$

$(\sqrt{8-2x})^2=(x)^2 \Rightarrow x^2=8-2x \Rightarrow x^2+2x-8=0$

$(x+4)(x-2)=0$

$\cancel{x=-4}$, $\boxed{x=2}$

$\sqrt{8+8}-(-4)=\sqrt{16}-(-4)=4+4=8$ X

$\sqrt{8-4}-2=\sqrt{4}-2=2-2=0$ ✓

1f. $4\left|1-\frac{3}{4}x\right|+7=10$

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

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

$1-\frac{3}{4}x=\frac{3}{4}$ or $1-\frac{3}{4}x=-\frac{3}{4}$

$\left(-\frac{4}{3}\right)-\frac{3}{4}x=-\frac{1}{4}\left(-\frac{4}{3}\right)$ $\left(-\frac{4}{3}\right)-\frac{3}{4}x=-\frac{7}{4}\left(-\frac{4}{3}\right)$

$x=\frac{1}{3}$ $x=\frac{7}{3}$

$\boxed{x=\left\{\frac{1}{3},\frac{7}{3}\right\}}$

2a. $\frac{x}{3}-\frac{3}{4}-1>\frac{x}{2}$

$\left(\frac{x}{3}-\frac{7}{4}>\frac{x}{2}\right)12$

$4x-21>6x$

$-21>2x$

$x<-\frac{21}{2}$

$\boxed{\left(-\infty,-\frac{21}{2}\right)}$

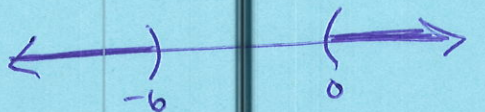
b. $\left|\frac{2x+6}{3}\right|>2$

$\frac{2x+6}{3}>2$ or $\frac{2x+6}{3}<-2$

$2x+6>6$ $2x+6<-6$

$2x>0$ $2x<-12$

$x>0$ $x<-6$



$(-\infty,-6)\cup(0,\infty)$

c. $-3\le\frac{2x+5}{3}<6$ *3

$-9\le 2x+5<18$

$-5\quad -5\quad -5$

$-14\le 2x<13$

$\frac{-14\le 2x<13}{2}$

$-7\le x<\frac{13}{2}$

$\boxed{\left[-7,\frac{13}{2}\right)}$