Show all necessary steps Clearly, Neatly, and Systematically to receive full credit. Any incorrect statement will be penalized.

1. Solve: $7[2-(3+4x)]-2x=-9+2(1-15x)$.

$$7[2-3-4x]-2x = -9+2-30x$$

$$7(-1-4x]-2x = -7-30x$$

$$-7-28x-2x = -7-30x$$

$$-7-30x = -7-30x$$

$$-7 = -7$$

$$\{ \mathbb{R}\}_{//}$$

2. Perform indicated operations: $\dfrac{-3\left(\dfrac{-5-(-9)}{-2\cdot 3-1}\right)-\sqrt{(-5)^2-3^2}}{|-9-(-7)|-|-5-(-8)|}$.

$$\approx \frac{-3\left(\frac{4}{-7}\right)-\sqrt{25-9}}{|-2|-|3|}$$

$$= \frac{\frac{12}{7}-4}{2-3}$$

$$= \frac{\frac{12}{7}-\frac{28}{7}}{-1}$$

$$= \frac{-\frac{16}{7}}{-1}$$

$$= \frac{16}{7}$$

$$\left\{ \frac{16}{7}\right\}_{//}$$

3. Solve: $\frac{3}{4}(x-2)-\frac{1}{5}(x-8)>-\frac{1}{2}$. Write the solution set in interval notation and graph.

$$\frac{3}{4}x-\frac{3}{2}-\frac{1}{5}x+\frac{8}{5} > -\frac{1}{2}$$

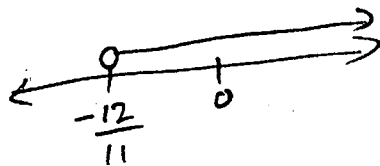$$20\cdot\left(\frac{3}{4}x-\frac{3}{2}-\frac{1}{5}x+\frac{8}{5}\right) > \left(-\frac{1}{2}\right)\cdot20$$

$$15x-30-4x+32 > -10$$

$$11x+2 > -10$$

$$11x > -12$$

$$x > -\frac{12}{11}$$

$$\left(-\frac{12}{11},\infty\right)$$



4. Solve: $13|14-15x|-16>10$. Write the solution set in interval notation.

$$13|14-15x| > 26$$

$$|14-15x| > 2$$

$14-15x > 2$   or   $14-15x < -2$

$-15x > -12$            $-15x < -16$

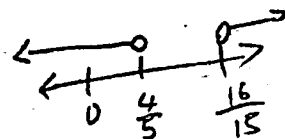$x < \frac{-12}{-15}$            $x > \frac{-16}{-15}$

$x < \frac{4}{5}$            $x > \frac{16}{15}$

gde.



$$\left(-\infty,\frac{4}{5}\right)\cup\left(\frac{16}{15},\infty\right)$$

5. Evaluate: $\dfrac{7y-5x}{2w}$ for $w=4$, $x=-\dfrac{3}{4}$, $y=\dfrac{1}{2}$.

$$= \frac{7\left(\frac{1}{2}\right)-5\left(-\frac{3}{4}\right)}{2\,(4)}$$

$$= \frac{\frac{7}{2}+\frac{15}{4}}{8}$$

$$= \frac{\left(\frac{7}{2}+\frac{15}{4}\right)\cdot 4}{(\;8\;)\cdot 4}$$

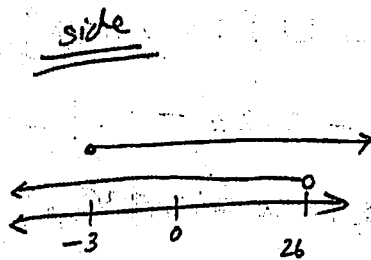$$= \frac{14+15}{32}$$

$$= \frac{29}{32} \quad \text{//}$$

union

6. Solve: $-\dfrac{11}{13}x>-22$ or $3x+2\geq-7$. Write the solution set in interval notation and set-builder notation.

$x < -22 \cdot -\dfrac{13}{11}$ | $3x \geq -9$

$x < 26$ | $x \geq -3$

<u>side</u>

$(-\infty, \infty)$

$\{x \mid x = \mathbb{R}\}$

7. Solve: $a = \dfrac{a+b+c}{d}$ for $a$.

$$ad = a + b + c$$
$$ad - a = b + c$$
$$a(d-1) = b + c$$
$$a = \frac{b+c}{d-1} \; /\!/$$

8. Simplify: $0.3u - 1.1[3v - (v - 1.1u)] + 2v$.

$$= 0.3u - 1.1[3v - v + 1.1u] + 2v$$
$$= 0.3u - 1.1[2v + 1.1u] + 2v$$
$$= 0.3u - 2.2v - 1.21u + 2v$$
$$= -0.91u - 0.2v \; /\!/$$

9. Solve: $\left|\frac{2}{3}x-2\right|=\left|\frac{1}{3}x+3\right|$.

$$\frac{2}{3}x-2=\frac{1}{3}x+3 \quad \text{or} \quad \frac{2}{3}x-2=-\left(\frac{1}{3}x+3\right)$$

$$\frac{1}{3}x-2=3 \qquad\qquad \frac{2}{3}x-2=-\frac{1}{3}x-3$$

$$\frac{1}{3}x=5 \qquad\qquad\qquad x-2=-3$$

$$x=15 \qquad\qquad\qquad\qquad x=-1$$

$$\{-1,\ 15\}\ //$$

10. Solve: $\frac{4x+1}{3}-\frac{x-3}{6}=\frac{x+5}{6}$.

$$6\left(\frac{4x+1}{3}-\frac{x-3}{6}\right)=\left(\frac{x+5}{6}\right)\cdot 6$$

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

$$8x+2-x+3=x+5$$

$$7x+5=x+5$$

$$6x+5=5$$

$$6x=0$$

$$x=0$$

$$\{0\}\ //$$

11. Solve: $\dfrac{1}{5}\left|\dfrac{2}{3}x+\dfrac{1}{6}\right|+\dfrac{5}{2}<\dfrac{1}{2}$.

$$\dfrac{1}{5}\left|\dfrac{2}{3}x+\dfrac{1}{6}\right|<-\dfrac{4}{2}$$

$$\dfrac{1}{5}\left|\dfrac{2}{3}x+\dfrac{1}{6}\right|<-2$$

$$\left|\dfrac{2}{3}x+\dfrac{1}{6}\right|<-10$$

$$\phi$$

12. To start training for a triathlon, an athlete runs 8 times longer than she swims, and cycles 45 miles longer than she runs. If she covers a overall distance of 70.5 miles, find the length of each part of her workout. (*Make sure to show in 3 steps format*)

distance travel    run $= 8x$

"         swim $= x$

"         cycles $= 8x+45$

$$8x + x + 8x + 45 = 70.5$$
$$17x + 45 = 70.5$$
$$17x = 25.5$$
$$x = 1.5$$

distance   running $= 12$   miles

"       swimming $= 1.5$   "

"       cycling $= 57$   "

side

$$\begin{array}{r} 1.5 \\ 17\,\overline{\smash)25.5} \\ \underline{17\phantom{.5}} \\ 8.5 \\ \underline{-8.5} \\ 0 \end{array}$$