

1-4 Solving Equations

This is like skill 2
(clear denominators)

1. $24 \left(\frac{5}{8} + \frac{2}{3}x = 2x - \frac{3}{4} \right)$
multiply by LCD

$$\cancel{24} \cdot \frac{5}{\cancel{8}} + \cancel{24} \cdot \frac{2}{\cancel{3}}x = 24 \cdot 2x - \cancel{24} \cdot \frac{3}{\cancel{4}}$$

$$15 + 16x = 48x - 18$$

$$+18 \quad -16x \quad -16x + 18$$

$$\frac{33}{32} = \frac{32x}{32}$$

$$x = \frac{33}{32}$$

3. $\frac{d}{3r} = \frac{3r(w+p)}{3r}$ for p

$$\frac{d}{3r} = w + p$$

$$\frac{d}{3r} - w = p$$

$$p = \frac{d}{3r} - w$$

Solving a literal eq.
2. $d = 3r(w+p)$ for r

$$\frac{d}{3(w+p)} = \frac{3r(w+p)}{3(w+p)}$$

$$r = \frac{d}{3(w+p)}$$

4. Solve $\frac{y}{1} = \frac{u+1}{u+2}$ for u.

cross multiply

$$y(u+2) = u+1$$

$$\begin{array}{r} yu + 2y = u + 1 \\ -u - 2y \quad -u - 2y \end{array}$$

$$yu - u = 1 - 2y$$

$$u(y-1) = 1 - 2y$$

$$\frac{yu - u}{y-1} = \frac{1 - 2y}{y-1}$$

$$u = \frac{1 - 2y}{y - 1}$$

I love this one!!

5. Solve for R:

$$r_1 R r_2 \left(\frac{1}{r_1} = \frac{3}{R} + \frac{2}{r_2} \right)$$

mult by LCD

$$\cancel{r_1} R \cancel{r_2} \cdot \frac{1}{\cancel{r_1}} = \cancel{r_1} R \cancel{r_2} \cdot \frac{3}{\cancel{r_2}} + \cancel{r_1} R \cancel{r_2} \cdot \frac{2}{\cancel{r_2}}$$
$$R r_2 = 3 r_1 r_2 + 2 r_1 R$$
$$- 2 r_1 R = 3 r_1 r_2 - 2 r_1 R$$

Factor

$$R r_2 - 2 r_1 R = 3 r_1 r_2$$
$$R (r_2 - 2 r_1) = 3 r_1 r_2$$
$$\div \frac{R (r_2 - 2 r_1)}{(r_2 - 2 r_1)} = \frac{3 r_1 r_2}{(r_2 - 2 r_1)}$$

$$R = \frac{3 r_1 r_2}{r_2 - 2 r_1}$$

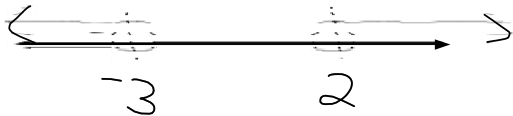
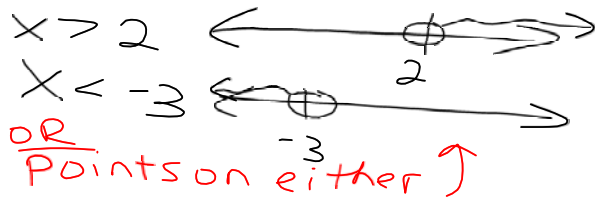
1-5 Solving Compound Inequalities

1. $4 - x < 2$ or $-1 > x + 2$

$$\begin{array}{r} -4 \quad -4 \\ -x \leq -2 \\ \hline -1 \quad -1 \\ x > 2 \end{array} \quad \left. \begin{array}{l} x + 2 < -1 \\ -2 \quad -2 \end{array} \right\} \begin{array}{l} x < -3 \\ -2 \quad -2 \end{array}$$

Switch

$x > 2$ or $x < -3$

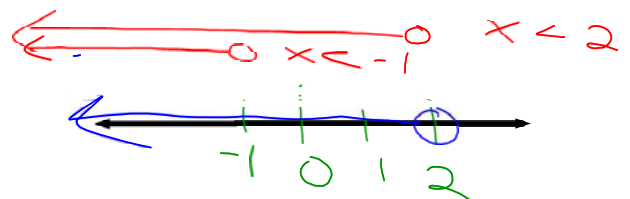


Answer: $x > 2$ or $x < -3$

2. $3x - 4 < 2$ or $4 > x + 5$

$$\begin{array}{r} +4 \quad +4 \\ 3x < 6 \\ \hline 3 \quad 3 \\ x < 2 \end{array} \quad \text{or} \quad \begin{array}{r} x + 5 < 4 \\ -5 \quad -5 \\ x < -1 \end{array}$$

$x < 2$ or $x < -1$

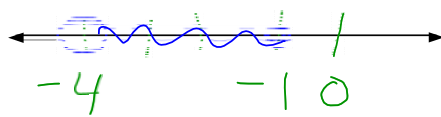
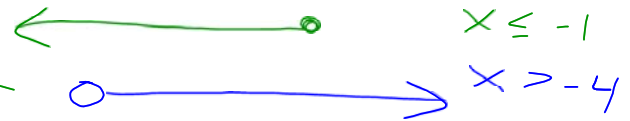


Answer: $x < 2$

3. $3 - 2x \geq x + 6$ and $\frac{-x}{2} + 1 < 3$

$\frac{-3x}{-3} \geq \frac{3}{-3}$ $2 \cdot \frac{-x}{2} < 2 \cdot 2$

$x \leq -1$ and $\frac{-x}{-1} < \frac{4}{-1}$
 $x > -4$



sandwich

AND - points on Both

Answer: $-4 < x \leq -1$

4. $2(x+4) > 4$ or $-3 \geq 5x+2$

$x+4 > 2$
 $x > -2$

$5x+2 \leq -3$
 $5x \leq -5$
 $x \leq -1$

OR pts on either one.

more ↓



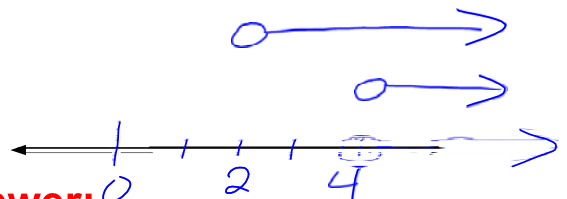
Answer:

all real numbers
 \mathbb{R}

5. $x+1 > 3$ and $-2x < -8$

$x > 2$ and $x > 4$

AND-Both!



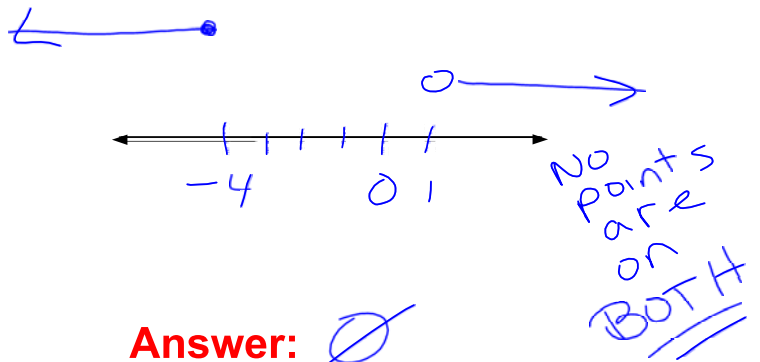
Answer:

$x > 4$

$$6. \frac{1}{2}(x+2) \leq -1 \text{ and } \frac{6x}{6} > \frac{6}{6}$$

$$x+2 \leq -2$$

$$x \leq -4 \text{ and } x > 1$$

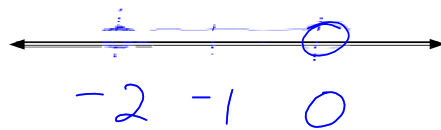


Answer: \emptyset
empty set
or no solution

$$7. -2 \leq 3x+4 < 4$$

$$\frac{-6}{3} \leq \frac{3x}{3} < \frac{0}{3}$$

$$-2 \leq x < 0$$



Answer: $-2 \leq x < 0$