

Math 115

Fall 2017

Lecture 5



Solve:

$$3(x+2) - 5(x-1) < 15$$

$$\underline{3x} + 6 - \underline{5x} + 5 < 15$$

$$-2x + 11 < 15$$

$$-2x < 15 - 11$$

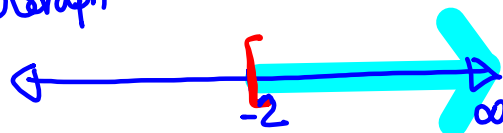
$$-2x \leq 4$$

Divide by -2

$$\frac{-2x}{-2} \geq \frac{4}{-2}$$

$$x \geq -2$$

① Graph



② Set-Builder notation

$$\{x \mid x \geq -2\}$$

③ Interval notation

$$[-2, \infty)$$

Solve

$$\frac{2}{3}x - \frac{1}{4} > x + \frac{5}{6}$$

clear fractions by multiplying
by LCD = 12

$$12 \cdot \frac{2}{3}x - 12 \cdot \frac{1}{4} > 12x + 12 \cdot \frac{5}{6}$$

$$8x - 3 > 12x + 10$$

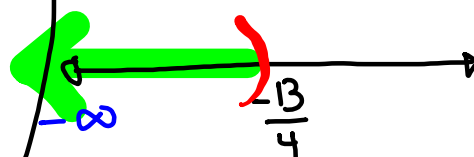
$$8x - 12x > 10 + 3$$

$$-4x > 13$$

Divide by -4

$$\frac{-4}{-4}x < \frac{13}{-4}$$

$$x < -\frac{13}{4}$$



S.B.N. $\{x | x < -\frac{13}{4}\}$

I.N. $(-\infty, -\frac{13}{4})$

Solve

$$-4 \leq 3x - 1 < 14$$

Add 1 to all three sides,

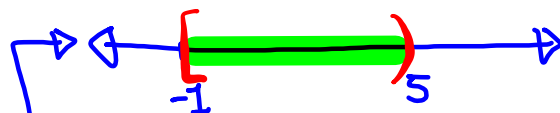
$$-4 + 1 \leq 3x - 1 + 1 < 14 + 1$$

$$-3 \leq 3x < 15$$

Divide by 3

$$-\frac{3}{3} \leq \frac{3}{3}x < \frac{15}{3}$$

$$-1 \leq x < 5$$



S.B.N.

$\{x | -1 \leq x < 5\}$

I.N.

$[-1, 5)$

Solve

$$4 \leq -5x + 4 < 29$$

Subtract 4 from all three sides

$$4 - 4 \leq -5x + 4 - 4 < 29 - 4$$

$$0 \leq -5x < 25$$

Divide by -5

$$\frac{0}{-5} \geq \frac{-5x}{-5} > \frac{25}{-5}$$

$$0 \geq x > -5$$

$$-5 < x \leq 0$$



S.B.N.

$$\{x \mid -5 < x \leq 0\}$$

I.N.

$$(-5, 0]$$

Use the graph below to give answers in S.B.N. & I.N.



S.B.N. $\{x \mid x \geq -3\}$

I.N. $[-3, \infty)$



S.B.N.

$$\{x \mid x < 4\}$$

I.N. $(-\infty, 4)$



S.B.N.

$$\{x \mid -2 \leq x \leq 7\}$$

I.N. $[-2, 7]$