Worksheet #19 Section 2.5 — Linear Inequalities

E. White

Solve each inequality giving your answer as an inequality, in interval notation, and graph the solution set.

(1) $x + 3 < 6$

(2) $2\,s > 6$

(3) $-3\,a - 6 \leq 0$

(4) $-3\,x \leq 12$

(5) $4\,x > -24$

(6) $-3\,a \geq -12$

(7) $-0.9\,s \geq 9$

(8) $11 > -2\,t$

(9) $-16\,t \geq -8\,t$

(10) $-11\,s \leq -8 + 5\,s$

(11) $2\,x - 5\,x > -15$

(12) $-3\,y - 5 \leq 6 - 11\,y$

(13) $3 - 2\,x \geq 9$

(14) $-5\,y \leq 0$

(15) $-2\,(x - 1) < -2\,(3\,x - 4)$

(16) $-10 < 3\,x - 5$

(17) $3\,x < -2\,x$

(18) $7 - 5\,(a - 2) < 2\,a + 1$

(19) $-2\,x - 3 < 3\,x - 12$

(20) $2\,(x - 3) < 0$

(21) $5 - 3\,(5 - 2\,x) \geq 2\,x + 1$

(22) $-3\,(x + 1) \geq 0$

(23) $3\,(2\,x - 1) \leq 21$

(24) $-\,(2\,x - 1) > -4$

(25) $5 - 2\,x < 12$

(26) $3\,(x - 2) \leq -2$

(27) $4 - 2\,x \geq -6$

(28) $2\,s \leq \dfrac{1}{4}$

(29) $4 - 2\,(2\,x - 3) < 1$

(30) $2\,(x - 3) \geq 3\,(x + 1)$

(31) $2\,(3\,z - 4) - 3\,(-5\,z - 12) < -2\,(z + 1)$

(32) $4\,(y - 2) - 5\,(y + 2) \leq 0$

(33) $\dfrac{-2\,x}{3} < 6$

(34) $9 - 8\,(-2 - x) - 7 > -3 - 2\,x$

(35) $\dfrac{x}{2} - \dfrac{x}{3} > \dfrac{1}{2}$

(36) $1.2\,x + 0.3 > 2.7$

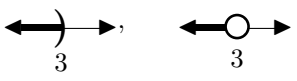
(37) $-0.5\,a \le a + 3.5$

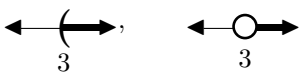
(38) $\dfrac{x}{-3} < \dfrac{5}{3}$

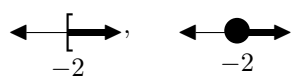
(39) $0.2\,t > 0.3$

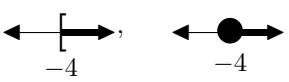
(40) $\dfrac{x+2}{2} - \dfrac{x}{3} < 1$

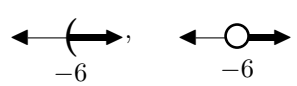
Answers:

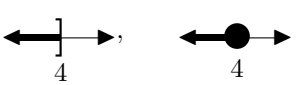
(1) $x < 3$, $(-\infty, 3)$, 

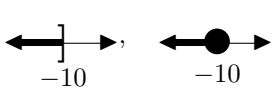
(2) $s > 3$, $(3, \infty)$, 

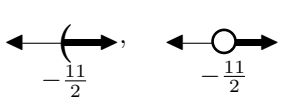
(3) $a \ge -2$, $[-2, \infty)$, 

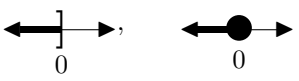
(4) $x \ge -4$, $[-4, \infty)$, 

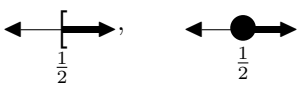
(5) $x > -6$, $(-6, \infty)$, 

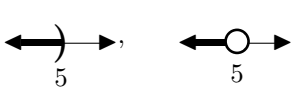
(6) $a \le 4$, $(-\infty, 4]$, 

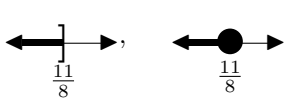
(7) $s \le -10$, $(-\infty, -10]$, 

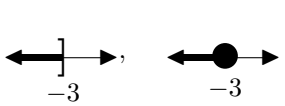
(8) $t > -\frac{11}{2}$, $(-\frac{11}{2}, \infty)$, 

(9) $t \le 0$, $(-\infty, 0]$, 

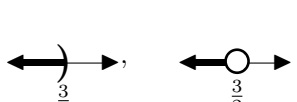
(10) $s \ge \frac{1}{2}$, $[\frac{1}{2}, \infty)$, 

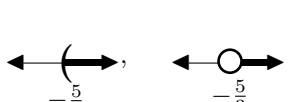
(11) $x < 5$, $(-\infty, 5)$, 

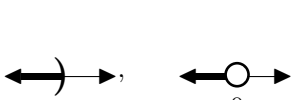
(12) $y \le \frac{11}{8}$, $(-\infty, \frac{11}{8}]$, 

(13) $x \le -3$, $(-\infty, -3]$, 

(14) $y \ge 0$, $[0, \infty)$, 

(15) $x < \frac{3}{2}$, $(-\infty, \frac{3}{2})$, 

(16) $x > -\frac{5}{3}$, $(-\frac{5}{3}, \infty)$, 

(17) $x < 0$, $(-\infty, 0)$, 

(18) $a > \frac{16}{7}$, $(\frac{16}{7}, \infty)$, 

(19) $x > \frac{9}{5}$, $(\frac{9}{5}, \infty)$, 

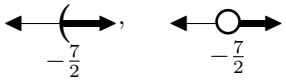
(20) $x < 3$, $(-\infty, 3)$, 

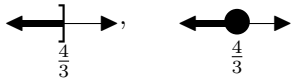
(21) $x \ge \frac{11}{4}$, $[\frac{11}{4}, \infty)$, 

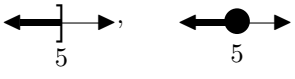
(22) $x \le -1$, $(-\infty, -1]$, 

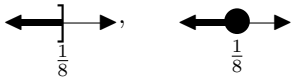
(23) $x \le 4$, $(-\infty, 4]$, 

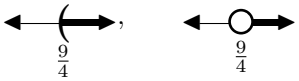
(24) $x < \frac{5}{2}$, $(-\infty, \frac{5}{2})$, 

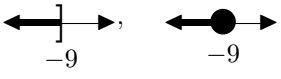
(25) $x > -\frac{7}{2}$, $(-\frac{7}{2}, \infty)$, 

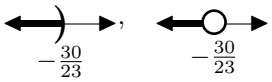
(26) $x \leq \frac{4}{3}$, $(-\infty, \frac{4}{3}]$, 

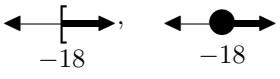
(27) $x \leq 5$, $(-\infty, 5]$, 

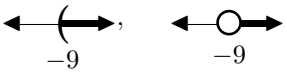
(28) $s \leq \frac{1}{8}$, $(-\infty, \frac{1}{8}]$, 

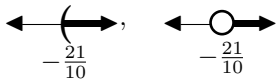
(29) $x > \frac{9}{4}$, $(\frac{9}{4}, \infty)$, 

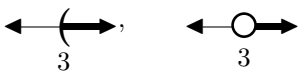
(30) $x \leq -9$, $(-\infty, -9]$, 

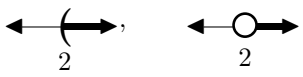
(31) $z < -\frac{30}{23}$, $(-\infty, -\frac{30}{23})$, 

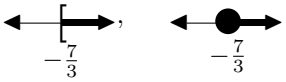
(32) $y \geq -18$, $[-18, \infty)$, 

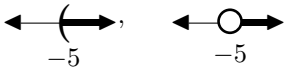
(33) $x > -9$, $(-9, \infty)$, 

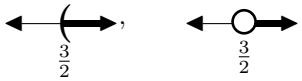
(34) $x > -\frac{21}{10}$, $(-\frac{21}{10}, \infty)$, 

(35) $x > 3$, $(3, \infty)$, 

(36) $x > 2$, $(2, \infty)$, 

(37) $a \geq -\frac{7}{3}$, $[-\frac{7}{3}, \infty)$, 

(38) $x > -5$, $(-5, \infty)$, 

(39) $t > \frac{3}{2}$, $(\frac{3}{2}, \infty)$, 

(40) $x < 0$, $(-\infty, 0)$,