

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 2.1

Math 1090 Worksheet

FALL 2026

SOLUTIONS

1. (a) Since this is a single inequality, we can solve it directly:

$$4 - 3x \leq x + 8$$

$$-4 \leq 4x$$

$$-1 \leq x,$$

so the the solution is $[-1, \infty)$.

- (b) Again, we can just solve this single inequality directly, recalling that if we multiply or divide by a negative number, we must change the direction of the inequality:

$$-4x > 9$$

$$x < -\frac{9}{4}$$

so the solution is $(-\infty, -\frac{9}{4})$.

- (c) Since the only x appears in the middle part of the double inequality, we can solve it all together:

$$-7 < 2x - 5 < 0$$

$$-2 < 2x < 5$$

$$-1 < x < \frac{5}{2}$$

so the solution is $(-1, \frac{5}{2})$.

- (d) This time, we must split the double inequality into two single inequalities. First we have

$$5 + 4x \leq 3x + 1$$

$$x \leq -4$$

and secondly,

$$3x + 1 \leq 2x + 9$$

$$x \leq 8.$$

The solution must obey both of these conditions — that is, $x \leq -4$ and $x \leq 8$ — so the full solution is $(-\infty, -4]$.

(e) We proceed much as in part (d):

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

$$4 \leq 4x$$

$$1 \leq x$$

and

$$3x + 1 \leq 2x + 9$$

$$x \leq 8$$

so the solution is $[1, \infty) \cup (-\infty, 8] = [1, 8]$.

(f) We can rewrite this inequality as a double inequality:

$$\begin{array}{rcccl} -3 & \leq & 4x + 1 & \leq & 3 \\ -4 & \leq & 4x & \leq & 2 \\ -1 & \leq & x & \leq & \frac{1}{2}. \end{array}$$

Thus the solution is $[-1, \frac{1}{2}]$.

(g) This time, we need to rewrite the given inequality as two separate inequalities. First we have

$$6 - x > 2$$

$$4 > x$$

and secondly,

$$6 - x < -2$$

$$8 < x.$$

Hence the solution is $(-\infty, 4) \cup (8, \infty)$.