

1. Solve the following inequalities. Give your answer in (i) set builder notation, (ii) interval notation, and (iii) graphically on a number line.

(a) $2x + 6 \leq 4$

(b) $-2y + 4 < 10$

(c) $-\frac{3}{2}y > -\frac{21}{16}$

(d) $\frac{2}{5}a - 3 \geq 5$

2. The revenue R for selling x fleece jackets is given by the equation $R = 49.95x$. The cost to produce x jackets is $C = 2300 + 18.50x$. Find the number of jackets that the company can sell to produce a profit. Give your answer in interval notation.

3. Find the intersection or union of the following sets, as indicated. Give your answer in interval notation.

(a) $(-2, 5) \cap [-1, \infty)$

(b) $(-\infty, 4) \cup [-1, 5)$

(c) $[-1, 5) \cup (0, 3)$

(d) $[-1, 5) \cap (0, 3)$

4. The inequality $4 < t < 1$ has no solution. Why not?

5. Solve the compound inequality. Give your answer in (i) set builder notation, (ii) interval notation, and (iii) graphically on a number line.

(a) $-6 < 3x - 9 \leq 0$

(b) $-1 < -2x + 4 < 5$

(c) $-3 \leq \frac{1}{2}x < 0$

(d) $2y - 1 \geq 3$ or $y < -2$

(e) $\frac{5}{3}v \leq 5$ or $-v - 6 < 1$