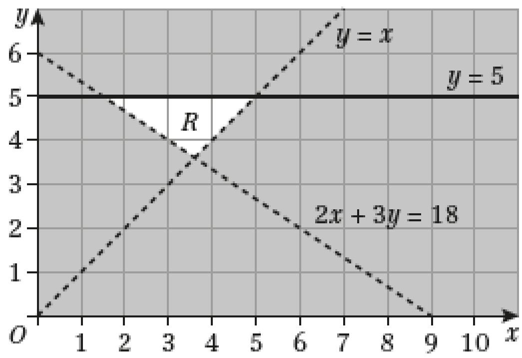
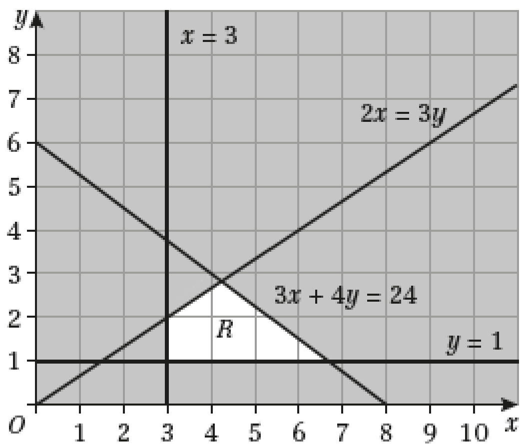
Linear Programming 6B

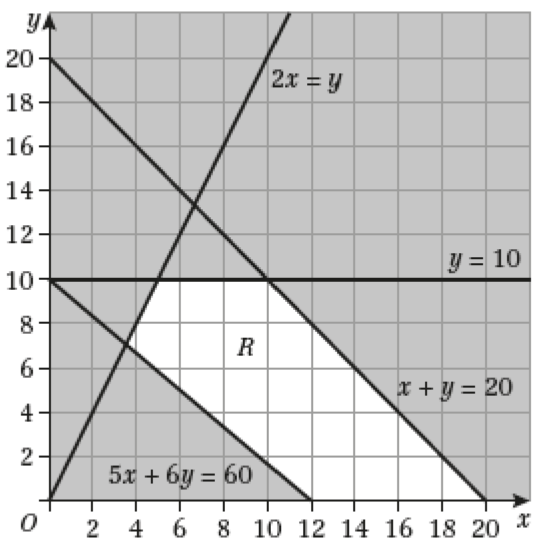
1 **a** As $x, y \geqslant 0$ is one of the constraints, we restrict our attention to the first quadrant.



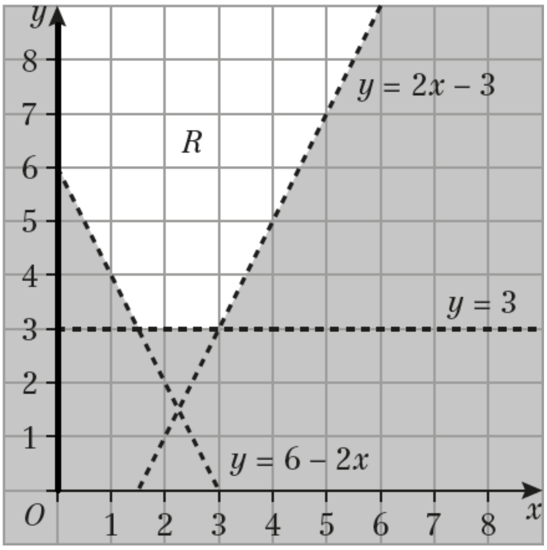
b All lines are solid as none of the inequalities is strict.



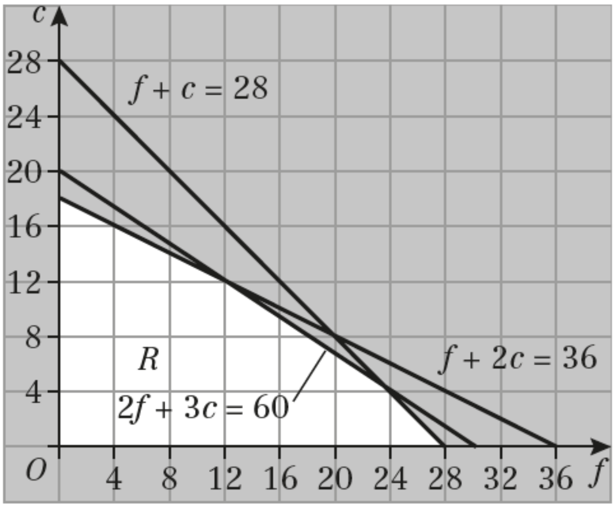
c R is unbounded in this case.



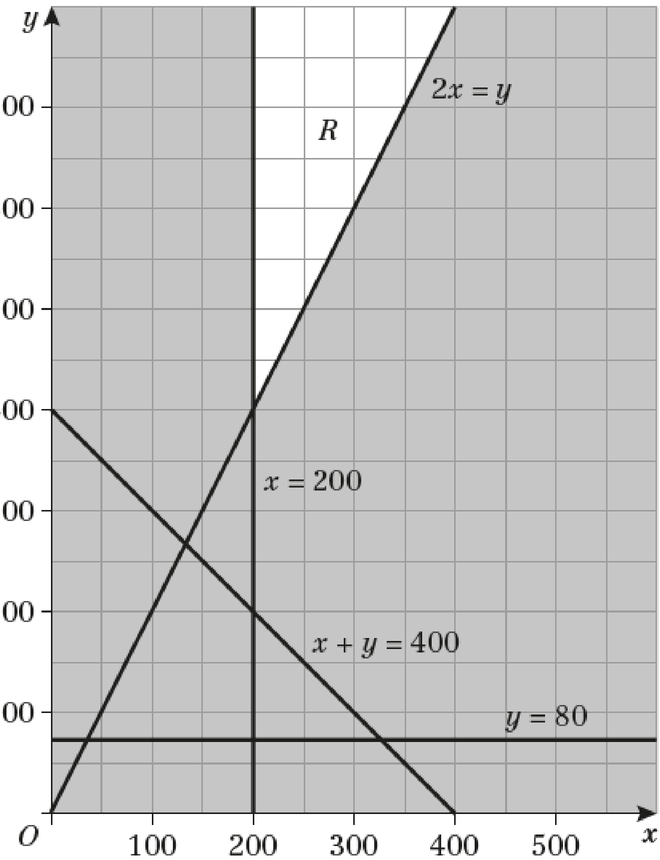
1 d We use a dashed line when the constraint inequality is strict.



2 We are only interested in the feasible region, so we do not consider the objective function.



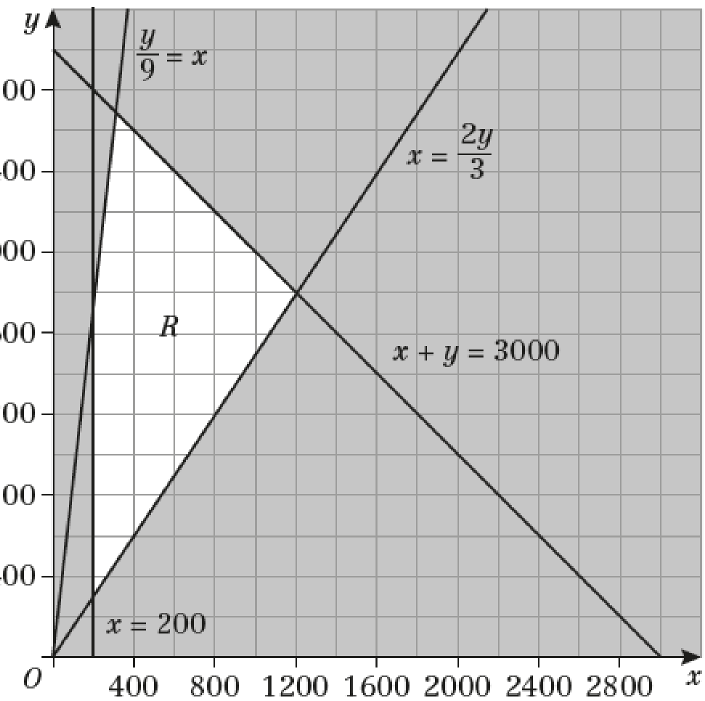
3 Feasible region is unbounded in this case.



4 Let x represent the number of type A and y represent the number of type B.
The constraints translate to $x \geq 200$, $0.1(x+y) \leq x \leq 0.4(x+y)$ and $x+y \leq 3000$.

Simplifying: $x \geqslant 200$, $\frac{y}{9} \leqslant x \leqslant \frac{2y}{3}$ and $x+y \leqslant 3000$

Non-negativity constraint $y \geqslant 0$ (positivity of x is enforced by $x \geqslant 200$).
Objective function is irrelevant for the question.



5 a The bounding lines are $y = \frac{x}{4}$ and $y = \frac{x}{2} + 10$, so the respective constraints are

$y \geqslant \frac{x}{4}$ and $y \leqslant \frac{x}{2} + 10$

b