Inequalities and regions on graphs

1) Draw axes labelled from -8 to 8 on both x and y.
(a) Show each of the inequalities below on your graph, by shading the area where the inequality is **false**.

$3x + 4y \leq 24$ $y \geq x$ $x > -3$

(b) Label the region where all the inequalities are **true** with a letter R.
(c) For each of the points below, state whether or not it lies in the region R. If it does not lie in R, say which inequality is not true.
(i) (3, 3)
(ii) (-3, -3)
(iii) (-1, 7)
(iv) $\left(3\frac{3}{7}, 3\frac{3}{7}\right)$

2) Draw axes labelled from -8 to 8 on both x and y.
Draw the lines $y = 1$ and $y = x + 3$.
Shade each of the following regions using a different colour:
A: $y < x + 3$ and $y > 1$
B: $y < x + 3$ and $y < 1$
C: $y > x + 3$ and $y < 1$

3) Draw axes labelled from -8 to 8 on both x and y.
Draw the lines $x = 1$ and $y = 5 - 2x$.
Shade each of the following regions using a different colour:
A: $y < 5 - 2x$ and $x > 1$
B: $y > 5 - 2x$ and $x > 1$
C: $y > 5 - 2x$ and $x < 1$

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