

Solutions

Accept equivalent correct methods and supported interpretations. The marks check reasoning; they are not an official grade.

2.1 A – At $a=3$ both sides are the same expression. B gives $-3x=0$ and only $x=0$; C gives $x=0$. Neither is an identity.

Correct response linked to the given case.

2.2 A – Dividing by -3 reverses $\leq$ to $\geq$. B forgets to reverse the inequality after division by a negative; C changes the sign of the boundary incorrectly.

Correct response linked to the given case.

2.3 9 – Set $x=0$ to obtain $y=9$.

Correct response linked to the given case.

2.4 False – Doubling the first gives $2x+2y=4$, inconsistent with 5.

Correct response linked to the given case.

3.1 Collect terms to get $(p-3)x = p-3$. At $p=3$, the equation is $0=0$, so every real x works. At $p \neq 3$, divide by $p-3$ to get $x=1$. There is no value of p giving no solution. Substitution of $x=1$ gives $p+2$ on both sides.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence
. Accurate conditions, checks or qualification.

3.2 Use $C = f + rt$. The equations are $31 = f + r(3\text{ h})$ and $59 = f + r(7\text{ h})$. Subtract: $r = (59 - 31)\text{ yuan}/(7 - 3)\text{ h} = 7\text{ yuan/h}$. Then $f = 31\text{ yuan} - (7\text{ yuan/h})(3\text{ h}) = 10\text{ yuan}$. Budget: $10 + 7t \leq 80$, so $t \leq 10$ hours. Ten whole hours is affordable; eleven costs 87 yuan.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence.
Accurate conditions, checks or qualification.

3.3 The first boundary is dashed and the second solid. The common region is above the first line and on or below the second. At $(2, 3)$ the first condition is $3 > 3$, which fails. For the vertical interval to exist, $2x - 1 < -x + 5$, hence $x < 2$. The lines meet at $(2, 3)$ but their meeting point is excluded.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence.
Accurate conditions, checks or qualification.