#1 (a)

$x + y = 10$

$\oplus\ 2x - y = 5$

$3x = 15$

$\frac{3x}{3} = \frac{15}{3}$

$x = 5$

1b)

$2x + 3y = 12$

$\oplus\ -2x - 5y = -8$

$-2y = 4$

$\frac{-2y}{-2} = \frac{4}{-2}$

$y = -2$

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#2(a) $-x+13y=-22$

$\ominus\ -x-15y=6$

$\frac{28y}{28}=\frac{-28}{28}$

$y=-1$

(b) $-5x-7y=27$

$\ominus\ 2x-7y=20$

$\frac{-7x}{-7}=\frac{7}{-7}$

$x=-1$

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#3

$3x + y = 19$ — ①

①+② $+\ 4x - y = 2$ — ②

$7x = 21$

$\frac{7x}{7} = \frac{21}{7}$

$x = 3$

Sub $x = 3$ into ①

$3x + y = 19$

$3(3) + y = 19$

$9 + y = 19$

$-9 \quad -9$

$y = 10$

The solution is $(3, 10)$.

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#4 $x+2y=9$ —(1)

(+) $4x-2y=-4$ —(2)

$5x = 5$

$\frac{5x}{5} = \frac{5}{5}$

$x=1$

Sub $x=1$ into (1)

$x+2y=9$

$(1)+2y=9$ ✓

$1+2y=9$ ✓

$-1 \quad -1$

$2y=8$

$\frac{2y}{2} = \frac{8}{2}$

$y=4$

$1+2(4)=?\ 9$ ✓

$4(1)-2(4)=?\ -4$ ✓

The solution is $(1,4)$

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#7 $3x-4y=14$ —①

①-② (−) $3x+7y=-8$ —②

$-11y=22$

$\frac{-11y}{-11}=\frac{22}{-11}$

$y=-2$

Sub. $y=-2$ into ②

$3x+7y=-8$

$3x+7(-2)=-8$

$3x-14=-8$

$+14 \quad +14$

$\frac{3x}{3}=\frac{6}{3}$

$x=2$

$3(2)-4(-2)=?14$ ✓

$3(2)+7(-2)=?-8$ ✓

solution is $(2,-2)$.

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#8 $7x + 2y = 24$
$-(8x + 2y = 30)$

$-1x = -6$

$\frac{-1x}{-1} = \frac{-6}{-1}$

$x = 6$

The solution is $(6, -9)$

$7x + 2y = 24$

$7(6) + 2y = 24$

$42 + 2y = 24$

$-42 \quad -42$

$2y = -18$

$\frac{2y}{2} = \frac{-18}{2}$

$y = -9$

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#10 $5x+y=9$ — ①

$10x-7y=-18$ — ②

① x 2 $2(5x+y)=2(9)$

$10x+2y=18$ — ③

Sub $y=4$ into ①

② − ③ $10x-7y=-18$

$-(10x+2y=18)$

$-9y=-36$

$\frac{-9y}{-9}=\frac{-36}{-9}$

$y=4$

$5x+y=9$

$5x+(4)=9$

$5x+4=9$

$-4\quad -4$

$5x=5$

$\frac{5x}{5}=\frac{5}{5}$

$x=1$

The solution is (1,4).

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