Question 1:

Question	1	2	3	4	5	6	7	8	9	10
Answer	B	A	B	C	D	C	B	C	A	D
Question	11	12	13	14	15	16	17	18	19	20
Answer	A	C	A	D	C	B	D	A	B	C

Question 2:

1)

$$\frac{1}{2x-1}+\frac{3}{(2x-1)(x+1)}+\frac{1}{x+1}=\frac{x+1+3+2x-1}{(2x-1)(x+1)}=\frac{3x+3}{(2x-1)(x+1)}$$

$$=\frac{3(x+1)}{(2x-1)(x+1)}=\frac{3}{2x-1}.$$

2) $\dfrac{2x-6}{(x+1)^2} \times \dfrac{x^2-1}{3-x}=$

$$\frac{2(x-3)}{(x+1)(x+1)}\times\frac{(x+1)(x-1)}{-(x-3)}=\frac{-2(x-1)}{x+1}=\frac{-2x+2}{x+1}$$

Question 3:

1) $\left|2x-3\right|=\left|3x+1\right|$

There are two cases to consider.

Either $2x-3=3x+1$ OR $2x-3=-3x-1$

For either case $x=-4$ & for OR case $x=\dfrac{2}{5}$ the solution set $=\left\{-4,\dfrac{2}{5}\right\}.$

2) $x^2 - 2x + 3 = 0$

$\Delta = b^2 - 4ac = -8$ $\qquad x = \dfrac{-b \pm \sqrt{\Delta}}{2a}$ ➡ $x = \dfrac{2 \pm \sqrt{-8}}{2}$ ➡ $x = \dfrac{2 \pm 2\sqrt{2}i}{2}$

$x = 1 \pm \sqrt{2}i$ $\quad$ The solution set $= \left\{ 1 + \sqrt{2}i, 1 - \sqrt{2}i \right\}$.

Question 4:

1) $\dfrac{3}{2}x - 1 \leq x + \dfrac{1}{3}$ ➡ $\dfrac{3}{2}x - x \leq \dfrac{1}{3} + 1$ ➡ $\dfrac{x}{2} \leq \dfrac{4}{3}$ ➡ $x \leq \dfrac{8}{3}$

The solution interval $= \left(-\infty, \dfrac{8}{3} \right]$.

2) $5|3x - 1| - 7 \geq 8$

$5|3x - 1| \geq 15$ ➡ $|3x - 1| \geq 3$ $\qquad$ Either $\qquad 3x - 1 \geq 3$ $\qquad$ OR $\qquad 3x - 1 \leq -3$

For either case $x \geq \dfrac{4}{3}$ and for OR case $\quad x \leq -\dfrac{2}{3}$.

The solution set $= \left(-\infty, -\dfrac{2}{3} \right] \cup \left[\dfrac{4}{3}, \infty \right)$.

Question 5:

$$\begin{cases} x - y - 2z = 1 \text{...........................(1)} \\ x - 5y + 2z = 5 \text{...........................(2)} \\ 2x - 3y - 4z = 2 \text{...........................(3)} \end{cases}$$ Take the first equation with the second one and on other side

take the first with the third and eliminate z .

$$\begin{cases} x - y - 2z = 1 \\ x - 5y + 2z = 5 \end{cases}$$ $$\begin{cases} -2(x - y - 2z = 1) \\ 2x - 3y - 4z = 2 \end{cases}$$

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$2x - 6y = 6$...........(4). $y = 0$

Substitute the value of y in equation number 4 and then find x , we have:

$2x - 6(0) = 6$ Implies that $x = 3$ now find the value of z using any equation of the system.

$x - y - 2z = 1$

$3 - 0 - 2z = 1$

$z = 1$

The solution point $= (3, 0, 1)$.