12. Solve the following equation.

$$\frac{4x-1}{4} - \frac{2x-5}{8} = 3$$

[4]

13. Factorise the expression $12x^2 + 5x - 2$ and hence solve the equation $12x^2 + 5x - 2 = 0$.

-24

$+8 \quad -3$

$12x^2 + 8x - 3x - 2$

$4x(3x+2) - 1(3x+2)$

$(3x+2)(4x-1)$

$(3x+2)(4x-1) = 0$

[3]

either $3x + 2 = 0$ or $4x - 1 = 0$

$3x = -2$ $\quad 4x = 1$

$x = -\frac{2}{3}$ $\quad x = \frac{1}{4}$

18. Factorise the expression $15x^2 - 19x - 10$ and hence solve the equation $15x^2 - 19x - 10 = 0$.

-150

$-25 \quad +6$

$15x^2 - 25x + 6x - 10$

$5x(3x-5) + 2(3x-5)$

$(3x-5)(5x+2)$

[3]

Now $(3x-5)(5x+2) = 0$

either $3x - 5 = 0$ or $5x + 2 = 0$

$3x = 5$ $\quad$ $5x = -2$

$x = \frac{5}{3}$ $\quad$ $x = -\frac{2}{5}$

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18. *(a)* Make x the subject of the formula

$$x^2 + 3y = 8y + 13.$$

[3]

(b) Factorise $3x^2 + 10x - 8$ and hence solve the equation $3x^2 + 10x - 8 = 0$.

-24

$+12 \quad -2$

$3x^2 + 12x - 2x - 8$

$3x(x+4) - 2(x+4)$

$(x+4)(3x-2) = 0$

either $x+4=0$ or $3x-2=0$

$x = -4$ $\quad 3x = 2$

$x = \frac{2}{3}$

[3]