Simplify fully $\dfrac{x^2-25}{x^2+7x+10}$

(Total 4 marks)

Solve the equation $\dfrac{x}{2} - \dfrac{2}{x+1} = 1$

(Total 4 marks)

Algebra - Algebraic Fractions

Simplify fully $\dfrac{x^2 - 25}{x^2 + 7x + 10}$

$$= \frac{(x+5)(x-5)}{(x+2)(x+5)}$$

$$= \frac{x-5}{x+2}$$

Difference of two squares

$a^2 - b^2 = (a+b)(a-b)$

$x^2 - 25 = x^2 - 5^2$
$\quad\quad\quad = (x+5)(x-5)$

factors of +10

+1	+10
−1	−10
+2	+5 ✓
−2	−5

(Total 4 marks)

Solve the equation $\dfrac{x}{2} - \dfrac{2}{x+1} = 1$

Multiply equation by common denominator $2(x+1)$

$$x(x+1) - 2(2) = 1(2)(x+1)$$

$$x^2 + x - 4 = 2x + 2$$

$$x^2 + x - 4 - 2x - 2 = 0$$

$$x^2 - x - 6 = 0$$

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

factors of −6

+1	−6
−1	+6
+2	−3 ✓
−2	+3

Either $x + 2 = 0$ or $x - 3 = 0$

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

(Total 4 marks)