

5 MATHS HW 3/9/19

TO HAND IN TOMORROW.

① Factorise these as fully as possible:

(i) $3x - 8y - 2 + 12xy$

(ii) $10x^2 + 13x - 3$

(iii) $2a^2 + ab - 3b^2$

(iv) $4m^2 - 81n^2$

(v) $x^3 + 64$

(vi) $a^2b^4 - 8a^2b$

② Simplify

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

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

$$\begin{aligned} \textcircled{1} \text{ (i)} \quad & 3x - 2 + 12xy - 8y \\ &= 1(3x - 2) + 4y(3x - 2) \\ &= \boxed{(3x - 2)(1 + 4y)} \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & 10x^2 + 13x - 3 \\ &= (5x - 1)(2x + 3) \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad & 2a^2 + ab - 3b^2 \\ &= (2a + 3b)(a - b) \end{aligned}$$

$$\begin{aligned} \text{(iv)} \quad & 4m^2 - 81n^2 \\ &= (2m)^2 - (9n)^2 \\ &= \boxed{(2m - 9n)(2m + 9n)} \end{aligned}$$

$$\begin{aligned} \text{(v)} \quad & x^3 + 64 \\ &= x^3 + 4^3 \\ &= \boxed{(x + 4)(x^2 - 4x + 16)} \end{aligned}$$

$$\begin{aligned} \text{(vi)} \quad & a^2b^4 - 8a^2b \\ &= a^2b(b^3 - 8) \\ &= \boxed{a^2b(b - 2)(b^2 + 2b + 4)} \end{aligned}$$

$$\textcircled{2} \text{ (i)} \quad \frac{(x-1)(x-2) + (2x-3)(x+1)}{(x+1)(x-2)}$$

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

$$= \boxed{\frac{3x^2 - 4x - 1}{(x+1)(x-2)}}$$