**Harder Factor Theorem**

(a) Show that $2x-1$ is a factor of $2x^{3}+5x^{2}-7x+2$

(b) Show that $3x+1$ is a factor of $6x^{3}+21x^{2}-38x-15$

(c) Show that $5x-2$ is a factor of $5x^{3}+23x^{2}+40x-20$

(a) Show that $2x+1$ is a factor of $4x^{3}+4x^{2}-5x-3$ . Hence, fully factorise $4x^{3}+4x^{2}-5x-3$.

(b) Show that $4x-1$ is a factor of $4x^{3}+3x^{2}-25x+6$. Hence, solve $4x^{3}+3x^{2}-25x+6=0$.

(c) Show that $2x-3$ is a factor of $6x^{3}+25x^{2}-31x-30$. Hence, solve $6x^{3}+25x^{2}-31x-30=0$.

(a) Given that $2x-1$ is a factor of $4x^{3}-12x^{2}+ax+12$, find the value of $a$.

(b) Given that $3x+2$ is a factor of $6x^{3}+bx^{2}+27x+14$, find the value of $b$.

(c) Given that $2x-5$ is a factor of $cx^{3}-29x^{2}+16x-15$, find the value of $c$.

(a) Given that both $x-2$ and $2x+1$ are factors of $6x^{3}-ax^{2}-18x-b$, find the values of $a$ and $b$.

(b) Given that $x-a$ is a factor of $3x^{3}+2x^{2}-12ax-8a$, and that $a$ is a non-zero integer, find the value of $a$.

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