Higher Maths question bank :: Paper 1

16. Polynomial division & factorisation

1. a) Show $(x-1)$ is a factor of $f(x) = x^3 + 7x^2 + 7x - 15$.
   b) Hence, or otherwise, find all roots of $f(x) = 0$.

2. a) Show $(x+5)$ is a factor of $f(x) = x^3 + 15x^2 + 71x + 105$.
   b) Hence, or otherwise, find all roots of $f(x) = 0$.

3. a) Show $(x+3)$ is a factor of $f(x) = x^4 + 4x^3 - 17x^2 - 60x$.
   b) Hence, or otherwise, find all roots of $f(x) = 0$.

4. a) Show $(x+2)$ is a factor of $f(x) = -x^3 + 6x^2 + 9x - 14$.
   b) Hence, or otherwise, find all roots of $f(x) = 0$.

5. a) Show $(x-6)$ is a factor of $f(x) = x^3 - 16x^2 + 85x - 150$.
   b) Hence, or otherwise, find all roots of $f(x) = 0$.

6. a) Show $(x-2)$ is a factor of $f(x) = 2x^3 - 15x^2 + 34x - 24$.
   b) Hence, or otherwise, find all roots of $f(x) = 0$.

7. a) Show $(x+2)$ is a factor of $f(x) = 10x^3 + 7x^2 - 22x + 8$.
   b) Hence, or otherwise, find all roots of $f(x) = 0$.

8. a) Show $(x+6)$ is a factor of $f(x) = 12x^3 + 70x^2 - 16x - 24$.
   b) Hence, or otherwise, find all roots of $f(x) = 0$.

9. a) Show $(x+2)$ is a factor of $f(x) = x^5 - 6x^4 - 9x^3 + 14x^2$.
   b) Hence, or otherwise, find all roots of $f(x) = 0$.

10. a) Show $(x-2)$ is a factor of $f(x) = x^3 - 6x^2 + 12x - 8$.
    b) Hence, or otherwise, find all roots of $f(x) = 0$.