Discrete Mathematics (SEF015)

Extra Summation/Product Exercises

Write out the following sums in summation or product notation (whichever is appropriate)

1. $5 + 10x + 15x^2 + 20x^3 + 25x^4$

2. $1 + 2x + 4x^2 + 8x^3 + 16x^4 + 32x^5$

3. $(x-1)(x^2-2)(x^3-3)(x^4-4)$ (Hint: This should be written in product notation.)

4. $2x^2 + 2x^3 + 2x^4 + 2x^5 + 2x^6$

5. $1 - x^2 + x^4 - x^6 + x^8 - x^{10}$

6. $x^{100} + x^{50} + 1$

7. $\frac{1}{x} + \frac{2}{x^2} + \frac{3}{x^3} + \frac{4}{x^4}$

8. $(x^2-1)(x^4+1)(x^6-1)(x^8+1)$

9. $(x-2)(x-4)^2(x-6)^3(x-8)^4$

10. $1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!}$