

$$= 11x(x-2)(x-4)(x-6) + Ax(x-2)(x-4) + Bx(x-2) + Cx + D$$

Putting $x=0$
 $\therefore D = -15$

Putting $x=2$
 $176 + 40 + 8 - 15 = 2C + 15$
 $\Rightarrow 2C = 226$
 $\therefore C = 113$

Putting $x=4$
 $2816 + 320 + 32 + 4 = 8B + 452$
 $\Rightarrow 3172 - 452 = 8B$
 $\therefore B = 340$

Putting $x=6$
 $14256 + 1080 + 72 + 6 - 15 = 48A + 24 \times 340 + 113 \times 6 - 15$

$$\Rightarrow 15414 = 48A + 8160 + 678$$

$$\Rightarrow 6576 = 48A$$

$$\therefore A = 137$$

\therefore (1) becomes

$$f(x) = 11x^{(4)} + 137x^{(3)} + 340x^{(2)} + 113x^{(1)} - 15$$

$$\Rightarrow \Delta f(x) = 11 \times h \times 4x^{(3)} + 137 \times h \times 3x^{(2)} + 340 \times h \times 2x^{(1)} + 113 \times h$$

$$= 11 \times 2 \times 4x^{(3)} + 137 \times 2 \times 3x^{(2)} + 340 \times 2 \times 2x^{(1)} + 113 \times 2 \quad \{\because h=2\}$$

$$= 88x^{(3)} + 822x^{(2)} + 1360x^{(1)} + 226$$