

1. **Hint:** $\Delta \log f(x) = \log f(x+h) - \log f(x)$
2. **Hint:** $\Delta \binom{n}{x+1} = \binom{n+1}{x+1} - \binom{n}{x+1}$
3. **Hints:**
 - $E^{-k}f(x) = f(x - kh)$.
 - Use mathematical induction.
4. **Hint:** Use the basic error formula of interpolation.
5. **Ans:** $x^3 + x^2 - 3x + 1$
6. **Ans:** 48
Hint: Use Newton's forward interpolation formula
7. **Ans:** 96.6352 thousands
Hint: Use Newton's backward interpolation formula
8. **Ans:** $f(5) = 32.9333$
Hint: Use Lagrange's interpolation formula for five nodal points.
9. **Ans:** $\frac{5}{2(x-1)} - \frac{15}{(x-2)} + \frac{31}{2(x-3)}$
Hint: Take $f(x) = 3x^2 + x + 1$ and use Lagrange's interpolation formula for $f(x)$.
10. **Hints:** Use Lagrange's formula for the arguments -3, -1, 1, 3 and then put $x = 0$.
11. **Ans:** 4.07152
12. **Ans:** 9855 feet
Hint: Use trapezoidal formula for $n = 14$.
13. **Ans:** $h \leq 0.0047$
Hint: Error, $E = -\frac{(b-a)h^2}{12}f''(\zeta)$, $\zeta \in (a, b)$
14. **Hint:** Actual area = $\int_{-h}^h y \, dx$
15. **Ans:** 1.8278472