1 Compute the values for

1. $\sum_{i=-1}^{4} 3$

2. $\sum_{i=1}^{5} \left(\frac{1}{3}\right)^i$

3. $\sum_{i=1}^{n} 3$

4. $\sum_{i=-3}^{n} 3$

5. $\sum_{k=0}^{n} 2^k + \sum_{k=5}^{n} 2^k$

6. $\sum_{i=0}^{n} \left(\frac{2}{3}\right)^i + \sum_{i=-4}^{n} \left(\frac{2}{3}\right)^i$

7. $\sum_{i=1}^{n} (i^3 + 2 \cdot i^2 - i + 1)$

8. $\sum_{i=5}^{n} \left(-4 \cdot + \frac{i}{5}\right)$

9. $\sum_{j=0}^{k} \sum_{i=1}^{j} (i - j^2 - 2)$

10. $\sum_{j=1}^{m} \sum_{k=1}^{j} (3 \cdot + k - 3 \cdot j + i)$

11. $\sum_{l=-4}^{n} \sum_{j=1}^{k} \sum_{i=1}^{j} (i - 4)$

2. Calculate the answer

1. $log_4 x = 5 \rightarrow x = ?$

2. $log_3 y = 4 \rightarrow y = ?$

3. $x = 7^2 \rightarrow log_7 x = ?$

4. $x = 32 \rightarrow log_2 x = ?$

5. $2^{log5} + 4^{log6} - 27^{log_3 5}$

6. $9^{log_3 2} - 25^{log_5 4} - 36^{log_6 7} + 8^{log_8 6}$

7. $log(4^5 \times 8^3) - log(16 - 8) + log\left(\frac{2^{10}}{4 \times 3^2}\right)$

8. $log(3^2 \times 64^3) - log\left(\frac{2^{10} \times 128^3}{9 \times 8^2}\right)$

9. $loglog16$

10. $log16 \times log16$

11. $log^2 16$

12. $log_2 log_5 625 - log_3 log_4 2^{3^9} + log^4 2^5 - \frac{log^2(4^3 \times 3^5)}{log_5 125}$

13. $loglog_8 log256 + log^5(3^2) \times 4^{log7}$

14. $log_6 x = 5 \rightarrow log_x 6 = ?$

1

15. $log_y x = 10 \rightarrow log_x y =?$

16. $log_4 32 - log_8^2 4$

17. $log_4 8 + log_9 27 - log_{25}^2 125 - log_8^3 16 + log_4 log 256$

3. Compute the deriative of

1. $-5 \cdot x^3 + 2 \cdot x - 1$

2. $3 \cdot x^4 - 2\sqrt{x} + x^{\frac{1}{2}} - 6x^{-\frac{2}{3}} - 5$

3. $x \cdot \sqrt{x} + \sqrt{\sqrt{x}}$

4. $logx - x^2 lnx + lnx^4$

5. $ln^3(x\sqrt{2x-3}) + \sqrt{lnx^2}$

6. $\frac{\sqrt[4]{x+5}-lnx}{(x-1)^3}$

4. Determine the limit of

1. $lim_{x \to \infty} \frac{3x+2}{-5x-6}$

2. $lim_{x \to \infty}(\frac{1}{x} + 3)$

3. $lim_{x \to \infty} \frac{x^3+x-\sqrt{3x}}{\sqrt{x}}$

4. $lim_{x \to \infty} \frac{x^3+x-\sqrt{3x}}{5 \cdot x^{2.25} \cdot \sqrt{\sqrt{x}}}$

5. $lim_{x \to \infty} \frac{x^{0.1}-\sqrt{3}}{\sqrt{\sqrt{x}}}$

6. $lim_{x \to \infty} \frac{x^x}{2^x}$

7. $lim_{x \to \infty} \frac{x^x}{x(2^x)}$

8. $lim_{x \to \infty} \frac{\sqrt{2}^{log^4 x^3}}{log(2 \cdot x+7)}$

9. $lim_{x \to \infty} \frac{x+1}{\frac{3 \cdot x lnx}{2x^2}}$

10. $lim_{x \to \infty} \frac{\sqrt{2}^{log x^3}}{log^{lnx}(2x)}$

5. Compute the exact values for

1. $\int_1^n (2 \cdot x^4 + 5\sqrt{x})$

2. $\int_1^n (x^4 - 3 \cdot x^2 + \frac{1}{x} - \frac{1}{x^2})dx$

3. $\int_1^n (\frac{3}{\sqrt{x}} + lnx + e^x)dx$

4. $\int_1^n x \cdot sinxdx$

6. Use mathematical induction to prove that

$$1 + 2 + \ldots + n \quad = \quad \frac{n(n+1)}{2}$$

7. Use mathematical induction to prove that

$$1 + 2^2 + \ldots + n^2 \quad = \quad \frac{n(n+1)(2n+1)}{6}$$