

9. (a) Write down the next two terms in the sequence 162, 54, 18, 6, ...
 (b) The n th term of a sequence is $3 - 2n$. Find the 8th term of the sequence.
 (c) Find an expression, in terms of n , for the n th term of the sequence 2, 5, 8, 11, ...

10. Refer to the pattern below.

$$\begin{array}{l} 1 \times 3 + 1 = 4 \\ 2 \times 4 + 1 = 9 \\ 3 \times 5 + 1 = 16 \\ 4 \times 6 + 1 = 25 \\ \vdots \quad \vdots \quad \vdots \end{array}$$

- (a) Write down
 (i) the 7th line of the pattern,
 (ii) the n th line of the pattern.
 (b) Use the pattern to find the value of 11×13 .
 (c) Find the integer n such that $n(n + 2) = 783$.
11. Consider the sequence $\frac{2^3 - 1}{1}, \frac{3^3 - 1}{2}, \frac{4^3 - 1}{3}, \frac{5^3 - 1}{4}, \dots$
 (a) Write down the 5th term of the sequence.
 (b) Express the n th term of the sequence in terms of n .
 (c) Find the value of the 9th term of the sequence.

12. Simplify the following.

(a) $\frac{x^2 + x - 6}{2x^2 + 7x + 3}$
 (b) $\frac{3}{4x} - \frac{9}{10x} + \frac{4}{5x}$
 (c) $\frac{4}{x+5} + \frac{3}{x-1}$

13. Simplify the following.

(a) $\frac{2}{3pq} + \frac{7}{qr} - \frac{1}{2pr}$
 (b) $\frac{3x}{x^2 - 4} - \frac{5}{x + 2}$
 (c) $\frac{18}{5x^2 - 12x - 9} - \frac{13}{5x^2 - 7x - 6}$

14. Simplify the following.

(a) $\frac{x^2 - 8x + 15}{x^2 - 9} \times \frac{x^2 + 2x - 3}{x^2 - 7x + 10}$
 (b) $\frac{6x^2 - x - 2}{4x^2 - 1} \div \frac{9x^2 - 12x + 4}{2x^2 + 9x - 5}$