

1. Answer each of the following questions, showing all working.

- (a) Simplify $\frac{x^0 x^1}{x^2 x^2}$.
- (b) Simplify $x^0 x^{-3} y^{-3} \div (x^{-2} y^{-1}) \times y^1$.
- (c) Solve $-3x + 5 \leq -2x - 4$ and write your answer in interval format.
- (d) Expand and simplify $\sum_{i=2}^6 3ix$.
- (e) Expand and simplify $\sum_{i=1}^5 (-1)^i i$.
- (f) Write in summation notation: $\frac{-4}{2} + \frac{-4}{3} + \frac{-4}{4} + \frac{-4}{5}$.
- (g) Find x if $\sum_{i=2}^x -2i = -28$.
- (h) Find x if $\sum_{i=x}^{-2} -2i = 18$.
- (i) Find x if $\sum_{i=x-1}^x -2i = 14$.
- (j) Find x if $\sum_{i=-1}^2 xi = -2$.
- (k) Find x if $\sum_{i=0}^1 -2x = 8$.
- (l) Find x if $x = \sum_{i=1}^3 2i$.

2. Answer each of the following questions, showing all working.

- (a) Simplify $\frac{x^0 x^{-1}}{x^{-2} x^3}$.
- (b) Simplify $x^{-3} x^0 y^{-2} \div (x^{-2} y^{-3}) \times y^2$.
- (c) Solve $-2x + 4 \geq 3x - 5$ and write your answer in interval format.
- (d) Expand and simplify $\sum_{i=-2}^1 2ix$.
- (e) Expand and simplify $\sum_{i=1}^4 (-1)^i i$.
- (f) Write in summation notation: $\frac{-1}{4} + \frac{-1}{5} + \frac{-1}{6} + \frac{-1}{7} + \frac{-1}{8} + \frac{-1}{9}$.
- (g) Find x if $\sum_{i=2}^x i = 9$.
- (h) Find x if $\sum_{i=x}^{-2} -i = 5$.
- (i) Find x if $\sum_{i=x-1}^x i = 5$.
- (j) Find x if $\sum_{i=-1}^0 xi = -2$.
- (k) Find x if $\sum_{i=-2}^0 x = 3$.

(l) Find x if $x = \sum_{i=1}^4 3i$.

3. Answer each of the following questions, showing all working.

(a) Simplify $\frac{x^3 x^{-1}}{x^1 x^0}$.

(b) Simplify $x^{-3} x^2 y^3 \div (x^{-1} y^{-2}) \times y^2$.

(c) Solve $-2x + 3 \geq 2x - 4$ and write your answer in interval format.

(d) Expand and simplify $\sum_{i=2}^5 3ix$.

(e) Expand and simplify $\sum_{i=2}^5 (-1)^i i$.

(f) Write in summation notation: $\frac{4}{4} + \frac{4}{5} + \frac{4}{6} + \frac{4}{7} + \frac{4}{8} + \frac{4}{9}$.

(g) Find x if $\sum_{i=2}^x i = 2$.

(h) Find x if $\sum_{i=x}^0 -2i = 2$.

(i) Find x if $\sum_{i=x-1}^x -i = 1$.

(j) Find x if $\sum_{i=-2}^{-1} xi = 3$.

(k) Find x if $\sum_{i=1}^2 x = -2$.

(l) Find x if $x = \sum_{i=1}^3 3i$.

4. Answer each of the following questions, showing all working.

(a) Simplify $\frac{x^{-1} x^3}{x^2 x^1}$.

(b) Simplify $x^{-1} x^{-1} y^{-3} \div (x^{-3} y^{-1}) \times y^0$.

(c) Solve $-2x + 5 \leq -3x - 4$ and write your answer in interval format.

(d) Expand and simplify $\sum_{i=0}^3 4ix$.

(e) Expand and simplify $\sum_{i=2}^5 (-1)^i i$.

(f) Write in summation notation: $\frac{-3}{3} + \frac{-3}{4} + \frac{-3}{5} + \frac{-3}{6} + \frac{-3}{7} + \frac{-3}{8} + \frac{-3}{9}$.

(g) Find x if $\sum_{i=2}^x -i = -5$.

(h) Find x if $\sum_{i=x}^{-1} 3i = -9$.

(i) Find x if $\sum_{i=x-1}^x 3i = -15$.

(j) Find x if $\sum_{i=1}^4 xi = 0$.

(k) Find x if $\sum_{i=1}^4 -x = 4$.

(l) Find x if $x = \sum_{i=1}^3 i^0$.

5. Answer each of the following questions, showing all working.

(a) Simplify $\frac{x^1 x^{-3}}{x^{-2} x^1}$.

(b) Simplify $x^1 x^{-1} y^3 \div (x^2 y^2) \times y^{-3}$.

(c) Solve $3x + 3 > -2x - 1$ and write your answer in interval format.

(d) Expand and simplify $\sum_{i=0}^3 2ix$.

(e) Expand and simplify $\sum_{i=1}^5 (-1)^i i$.

(f) Write in summation notation: $\frac{1}{-8} + \frac{1}{-7} + \frac{1}{-6} + \frac{1}{-5} + \frac{1}{-4} + \frac{1}{-3} + \frac{1}{-2}$.

(g) Find x if $\sum_{i=1}^x -2i = -2$.

(h) Find x if $\sum_{i=x}^{-1} 3i = -18$.

(i) Find x if $\sum_{i=x-1}^x 2i = 10$.

(j) Find x if $\sum_{i=2}^4 xi = 9$.

(k) Find x if $\sum_{i=1}^2 x = 2$.

(l) Find x if $x = \sum_{i=-1}^0 3i^2$.