Question 1

Expand and simplify $\left(\frac{x}{y} - \frac{y}{x}\right)^4$.

Question 2

Expand and simplify $\left(x^2 - \frac{2}{x}\right)^4$.

Question 3

Expand and simplify $\left(x - \frac{2}{x}\right)^4$.

Question 4

find the term in x^2 in $(2+x)^4 \left(1 + \frac{1}{x^2}\right)$.

Question 5

Find the coefficient of x^8 in the expansion of $\left(x^2 - \frac{2}{x}\right)^7$.

Question 6

Determine the first three terms in the expansion of $(1-2x)^5(1+x)^7$ in ascending powers of x.

Question 7

The third term in the expansion of $(2x+p)^6$ is $60x^4$. Find the possible values of p.

Question 8

Find the coefficient of x^{-2} in the expansion of $(x-1)^3 \left(\frac{1}{x} + 2x\right)^6$.

Question 9

Consider the expansion of $\left(\frac{x^3}{2} + \frac{p}{x}\right)^8$. The constant term is 5103. Find the possible values of p.

Question 10

Consider the expansion of $x^2 \left(3x^2 + \frac{k}{x}\right)^8$. The constant term is 16 128.
Find k.

Answers

Question 1

$$\left(\frac{x}{y} - \frac{y}{x}\right)^4 = \left(\frac{x}{y}\right)^4 + 4\left(\frac{x}{y}\right)^3\left(-\frac{y}{x}\right) + 6\left(\frac{x}{y}\right)^2\left(-\frac{y}{x}\right)^2 + 4\left(\frac{x}{y}\right)\left(-\frac{y}{x}\right)^3 + \left(-\frac{y}{x}\right)^4$$

Question 2

$$x^8 - 8x^5 + 24x^2 - \frac{32}{x} + \frac{16}{x^4}$$

Question 3

$$32 - 240x + 720x^2 - 1080x^3 + 810x^4 - 243x^5$$

Question 4

$$(2 + x)^4 = 16 + 32x + 24x^2 + 8x^3 + x^4$$

term is $25x^2$

Question 5

$3\,247\,695$

Question 6

$$1 - 3x - 9x^2 + \ldots$$

Question 7

$p = \pm\frac{1}{2}(p = \pm0.5)$

Question 8

coefficient x^{-2} is -96

Question 9

$p = \pm3$

Question 10

$k = \pm2$