Exercise 2C

Q1

Answer :

(c) $\frac{125}{8}$

$$\left(\frac{2}{5}\right)^{-3} = \left(\frac{5}{2}\right)^{3} = \frac{5^3}{2^3} = \frac{125}{8}$$

Q2

Answer :

(d) $\frac{1}{81}$

$$(-3)^{-4} = \frac{1}{(-3)^4} = \frac{1}{(-1)^4 \times (3)^4} = \frac{1}{(3)^4} = \frac{1}{81}$$

Q3

Answer :

(b) $\frac{-1}{32}$

$$(-2)^{-5} = \frac{1}{(-2)^5} = \frac{1}{-32} = \frac{1 \times (-1)}{-32 \times (-1)} = \frac{-1}{32}$$

Q4

Answer :

(d) $\frac{1}{8}$

$$\left(2^{-5} \div 2^{-2}\right) = \left(\frac{1}{2^5} \div \frac{1}{2^2}\right) = \left(\frac{1}{32} \div \frac{1}{4}\right) = \left(\frac{1}{32} \times 4\right) = \frac{4}{32} = \frac{1}{8}$$

Q5

Answer :

(b) $\frac{60}{7}$

$$\left(3^{-1} + 4^{-1}\right)^{-1} \div 5^{-1} = \left(\frac{1}{3} + \frac{1}{4}\right)^{-1} \div \frac{1}{5} = \left(\frac{4+3}{12}\right)^{-1} \div \frac{1}{5} = \left(\frac{7}{12}\right)^{-1} \div \frac{1}{5} = \left(\frac{12}{7}\right) \div \frac{1}{5} = \frac{12}{7}$$

$\times 5 = \frac{60}{7}$

Q6

Answer :

(c) 29

$$\left(\frac{1}{2}\right)^{-2} + \left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-2} = \left(\frac{2}{1}\right)^{2} + \left(\frac{3}{1}\right)^{2} + \left(\frac{4}{1}\right)^{2}$$

$$= 2^2 + 3^2 + 4^2$$

$$= 4 + 9 + 16$$

$$= 29$$

Q7

Answer :

(a) $\frac{19}{64}$

$$\left\{\left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-3}$$

$$= \left\{3^3 - 2^3\right\} \div 4^3$$

$$= \{27 - 8\} \div 64$$

$$= 19 \div 64$$

$$= \frac{19}{64}$$

Q8

Answer :

(a) $\frac{1}{16}$

$$\left[\left\{\left(-\frac{1}{2}\right)^{2}\right\}^{-2}\right]^{-1}$$

$$=\left[\left\{-\frac{1}{2}\right\}^{-4}\right]^{-1}$$

$$=\left(-\frac{1}{2}\right)^{(-4\times-1)}$$

$$=\left(-\frac{1}{2}\right)^{4}$$

$$=\frac{1}{16}$$

Q9

Answer :

(d) 3

$$\left(\frac{7}{12}\right)^{-4}\times\left(\frac{7}{12}\right)^{3x}=\left(\frac{7}{12}\right)^{5}$$

$$\Rightarrow\left(\frac{7}{12}\right)^{-4+3x}=\left(\frac{7}{12}\right)^{5}$$

$$\Rightarrow 3x-4=5$$

$$3x=9$$

$$\text{or } x=\frac{9}{3}=3$$

Q10

Answer :

(d) 2

$\left(2^{3x-1}+10\right) \div 7 = 6$

$\Rightarrow \frac{\left(2^{3x-1}+10\right)}{7} = \frac{6}{1}$

On cross multiplying :

$\left(2^{3x-1}+10\right) \times 1 = 6 \times 7 = 42$

$\Rightarrow 2^{3x-1} = 42 - 10$

$\Rightarrow 2^{3x-1} = 32$

$\Rightarrow 2^{3x-1} = 2^5$

$\Rightarrow 3x-1 = 5$

$\Rightarrow 3x = 6$

Therefore, $x = 2$

Q11

Answer :

(c) 1

Using the law of exponents $\left(\frac{a}{b}\right)^0 = 1$:

$\therefore \left(\frac{2}{3}\right)^0 = 1$

Q12

Answer :

(c) $\frac{-3}{5}$

$\left(\frac{-5}{3}\right)^{-1} = \left(\frac{3}{-5}\right)^1 = \frac{3}{-5} = \frac{3\times(-1)}{-5\times(-1)} = \frac{-3}{5}$

********** END **********