Division law for indices

Maths

Mr Clasper

Division law for indices

1. Simplify each expression.

a) $a^5 \div a^3$ c) $c^7 \div c$

b) $b^4 \div b^3$ d) $d^7 \div d^7$

2. Which statements are true?

$$\frac{k^8}{k^4} = k^2 \qquad \frac{k^{10}}{k^7} = \frac{k^{100}}{k^{97}}$$

$$\frac{k^5}{k^3} = \frac{k \times k \times k}{k \times k \times k \times k \times k}$$

Correct any false statements

3. Simplify each expression.

a) $10f^3 \div 2$ d) $18m^{19} \div 2m^9$

b) $6g^5 \div g^2$ e) $49w^9 \div 7w$

c) $12h^7 \div 4h^5$ f) $19v^5 \div 19v^4$

4. Which expressions are equivalent to $\frac{2a^6}{3}$?

$$\frac{4a^{10}}{12a^4} \qquad \frac{4a^{10}}{6a^4} \qquad \frac{8a^{10}}{12a^4} \qquad \frac{12a^{10}}{8a^4}$$

Division law for indices

5. For each statement find the value of m and/or p.

a) $a^m \div a^5 = a^{-2}$

b) $a^5 \div a^p = a^7$

c) $15a^m \div pa^3 = 5a^2$

d) $ma^4 \div 4a^p = 3a^{-3}$

6. A boat travels $35a^6$ km in $7a^9$ hours.

$$\boxed{\text{Distance} = \text{Speed} \times \text{Time}}$$

Write an expression in terms of a for the average speed of the boat.

Answers

Division law for indices

1. Simplify each expression.

a) $a^5 \div a^3$ a^2 c) $c^7 \div c$ c^6

b) $b^4 \div b^3$ $b^1 = b$ d) $d^7 \div d^7$ d^0

2. Which statements are true?

$$\frac{k^8}{k^4} = k^2 \qquad\qquad \frac{k^{10}}{k^7} = \frac{k^{100}}{k^{97}}$$

False. k^4 True

$$\frac{k^5}{k^3} = \frac{k \times k \times k}{k \times k \times k \times k \times k} \qquad \frac{k \times k \times k \times k \times k}{k \times k \times k}$$

False

Correct any false statements

3. Simplify each expression.

a) $10f^3 \div 2$ $5f^3$ d) $18m^{19} \div 2m^9$ $9m^{10}$

b) $6g^5 \div g^2$ $6g^3$ e) $49w^9 \div 7w$ $7w^8$

c) $12h^7 \div 4h^5$ $3h^2$ f) $19v^5 \div 19v^4$ $v^1 = v$

4. Which expressions are equivalent to $\dfrac{2a^6}{3}$?

$$\frac{4a^{10}}{12a^4} \qquad \boxed{\frac{4a^{10}}{6a^4}} \qquad \boxed{\frac{8a^{10}}{12a^4}} \qquad \frac{12a^{10}}{8a^4}$$

Division law for indices

5. For each statement find the value of m and/or p.

a) $a^m \div a^5 = a^{-2}$ m = 3

b) $a^5 \div a^p = a^7$ p = -2

c) $15a^m \div pa^3 = 5a^2$ m = 5   p = 3

d) $ma^4 \div 4a^p = 3a^{-3}$ m = 12   p = 7

6. A boat travels $35a^6$ km in $7a^9$ hours.

$$\text{Distance} = \text{Speed} \times \text{Time}$$

Write an expression in terms of a for the average speed of the boat.

$5a^{-3}$ km/h