

Name: _____

Date: _____

LAWS OF EXPONENTS: PRODUCT RULE

Directions: Simplify each expression using the power rule.

#1

$$x^2 \cdot x^6$$

#2

$$x^3 \cdot x \cdot x^8$$

#3

$$x^4 \cdot x^3 \cdot x^{10}$$

#4

$$6x^2 \cdot 2x^5$$

#5

$$3x^3 \cdot 4x^6$$

#6

$$12x^4 \cdot 3x^2 \cdot x^2$$

#7

$$-5x^5 \cdot 2x^{10} \cdot 3x^2$$

#8

$$-2x^8 \cdot -4x^2 \cdot 3x^5$$

Name : _____

Exponents - Product Rule

A) Use the product rule to rewrite each expression as a single exponent.

1) $(-5)^{-10} \cdot (-5)^{15}$

2) $\left(\frac{4}{5}\right)^{-6} \cdot \left(\frac{4}{5}\right)^9$

3) $(1.4)^{-12} \cdot (1.4)^5$

4) $\left(-\frac{7}{6}\right)^9 \cdot \left(-\frac{7}{6}\right)^3$

5) $(-13)^0 \cdot (-13)^{-19}$

6) $8^{-14} \cdot 8^{-4}$

B) Find the value of x .

1) $10^x \cdot 10^{-9} = 10^{11}$

2) $\left(-\frac{8}{7}\right)^{-x} \cdot \left(-\frac{8}{7}\right)^{-15} = \left(-\frac{8}{7}\right)^{-10}$

3) $(-2.9)^{-13} \cdot (-2.9)^x = (-2.9)^{-5}$

$x =$ _____

$x =$ _____

$x =$ _____

4) $x^7 \cdot (5.6)^7 = (5.6)^{14}$

5) $(-20)^{16} \cdot (-20)^x = (-20)^{-3}$

6) $11^{-x} \cdot 11^6 = 11^{16}$

$x =$ _____

$x =$ _____

$x =$ _____

C) 1) Which of the following equals $(-19)^{-12} \cdot (-19)^4$?

i) $(-19)^{-8}$

ii) $(-19)^8$

iii) $(-19)^{17}$

iv) $(-19)^{16}$

2) Find the value of x , if $(-4.5)^x \cdot (-4.5)^9 = (-4.5)^{11}$.

i) 20

ii) -5

iii) -3

iv) 2