Name : _____

Exponents - Product Rule

T1S1

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

Name : _____

Answer key

T1S1

Exponents - Product Rule

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

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

$(-5)^{5}$

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

$\left(\frac{4}{5}\right)^{-15}$

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

$(1.4)^{-7}$

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

$\left(-\frac{7}{6}\right)^{12}$

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

$(-13)^{-19}$

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

8^{-18}

B) Find the value of x.

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

$x =$ **20**

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

$x =$ **–5**

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

$x =$ **8**

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

$x =$ **5.6**

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

$x =$ **–19**

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

$x =$ **–10**

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