

Name : \_\_\_\_\_

T1S1

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

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

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

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

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

$x =$  \_\_\_\_\_

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

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

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

$x =$  \_\_\_\_\_

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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

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           **$(-5)^5$**           

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**          

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