

## Exponents - Product Rule

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

1)  $\left(-\frac{2}{9}\right)^{12} \cdot \left(-\frac{2}{9}\right)^6$

2)  $(-4.1)^3 \cdot (-4.1)^5$

3)  $(-3)^{-8} \cdot (-3)^{-8}$

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\_\_\_\_\_

\_\_\_\_\_

4)  $6^{-7} \cdot 6^2$

5)  $17^{-4} \cdot 17^{-11}$

6)  $\left(\frac{1}{8}\right)^9 \cdot \left(\frac{1}{8}\right)^{-5}$

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\_\_\_\_\_

B) Find the value of  $x$ .

1)  $(9.2)^{-x} \cdot (9.2)^7 = (9.2)^5$

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$\left(\frac{7}{5}\right)^8 \cdot \left(\frac{7}{5}\right)^x = \left(\frac{7}{5}\right)^5$

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

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

4)  $16^{10} \cdot x^4 = 16^{14}$

$-8.7)^{-18} \cdot (-8.7)^x = (-8.7)^{-8}$

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

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

C) 1) Which of the following equals  $\left(\frac{1}{4}\right)^0 \cdot \left(\frac{1}{4}\right)^{-15}$  ?

i)  $\left(\frac{1}{8}\right)^{-15}$

ii)  $\left(\frac{1}{4}\right)^{-15}$

iii)  $\left(\frac{1}{4}\right)^{15}$

iv)  $\left(\frac{2}{4}\right)^{-15}$

2) Find the value of  $x$ , if  $12^{-x} \cdot 12^3 = 12^{-17}$ .

i) 14

ii) -16

iii) 20

iv) -18

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**Exponents - Product Rule**

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$\left(-\frac{2}{9}\right)^{18}$

$(-4.1)^8$

$(-3)^{-16}$

4)  $6^{-7} \cdot 6^2$

5)  $17^{-4} \cdot 17^{-11}$

6)  $\left(\frac{1}{8}\right)^9 \cdot \left(\frac{1}{8}\right)^{-5}$

$6^{-5}$

$\left(\frac{1}{8}\right)^4$

B) Find the value of  $x$ .

1)  $(9.2)^{-x} \cdot (9.2)^7 = (9.2)^5$

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$\left(\frac{7}{5}\right)^8 \cdot \left(\frac{7}{5}\right)^x = \left(\frac{7}{5}\right)^5$

$x = -2$

$x = -3$

4)  $16^{10} \cdot x^4 = 16^{14}$

$(-8.7)^{-18} \cdot (-8.7)^x = (-8.7)^{-8}$

$x = 16$

$x = 10$

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2) Find the value of  $x$ , if  $12^{-x} \cdot 12^3 = 12^{-17}$ .

i) 14

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