Name : _____

T2S1

Exponents - Power of a Power Rule

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

1) $(15^{5})^{9}$

2) $((-d)^{-6})^{6}$

3) $(s^{-18})^{-4}$

4) $\left(\left(\frac{2}{k}\right)^{3}\right)^{-7}$

5) $((-1.8)^{-11})^{-5}$

6) $\left(\left(-\frac{a}{b}\right)^{14}\right)^{2}$

B) Find the value of x.

1) $((2.5)^{-13})^{x} = (2.5)^{-39}$

x = _____

$(-r)^{-x})^{-8} = (-r)^{48}$

x = _____

4) $\left(\left(-\frac{v}{7}\right)^{5}\right)^{-x} = \left(-\frac{v}{7}\right)^{35}$

x = _____

$x^{7})^{3} = 9^{21}$

x = _____

C) 1) Which of the following equals $\left(\left(-\frac{4}{9}\right)^{2}\right)^{-15}$?

i) $\left(-\frac{4}{9}\right)^{30}$

ii) $\left(-\frac{4}{9}\right)^{-13}$

iii) $\left(-\frac{4}{9}\right)^{-30}$

iv) $\left(-\frac{4}{9}\right)^{-17}$

2) Find the value of x, if $((-y)^{9})^{-x} = (-y)^{-72}$.

i) 8

ii) –7

iii) 6

iv) 9

Name : _____

Answer key

T2S1

Exponents - Power of a Power Rule

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

1) $(15^5)^9$ — **15^{45}**

2) $((-d)^{-6})^6$ — **$(-d)^{-36}$**

3) $(s^{-18})^{-4}$ — **s^{72}**

4) $\left(\left(\frac{2}{k}\right)^3\right)^{-7}$ — **$\left(\frac{2}{k}\right)^{-21}$**

5) $((-1.8)^{-11})^{-5}$

6) $\left(\left(-\frac{a}{b}\right)^{14}\right)^2$ — **$\left(-\frac{a}{b}\right)^{28}$**

B) Find the value of x.

1) $((2.5)^{-13})^x = (2.5)^{-39}$ — x = **3**

$(-r)^{-x})^{-8} = (-r)^{48}$ — x = **6**

4) $\left(\left(-\frac{y}{7}\right)^5\right)^{-x} = \left(-\frac{y}{7}\right)^{35}$ — x = **−7**

$x^7)^3 = 9^{21}$ — x = **9**

C) 1) Which of the following equals $\left(\left(-\frac{4}{9}\right)^2\right)^{-15}$?

i) $\left(-\frac{4}{9}\right)^{30}$ ii) $\left(-\frac{4}{9}\right)^{-13}$ iii) ✓ $\left(-\frac{4}{9}\right)^{-30}$ iv) $\left(-\frac{4}{9}\right)^{-17}$

2) Find the value of x, if $((-y)^9)^{-x} = (-y)^{-72}$.

i) ✓ 8 ii) −7 iii) 6 iv) 9