

Practice

Tue 9 Apr 2019

1) Simplify, then evaluate, leaving your answers as fractions or integers

$$a) 13^3 \cdot 13^{-4} = 13^{3-4} = 13^{-1} = \frac{1}{13} \checkmark$$

$$b) \frac{10^{-3}}{10^{-5}} = 10^{-3-(-5)} = 10^{-3+5} = 10^2 = \underline{\underline{100}} \checkmark$$

$$c) \left(\frac{10^{-3}}{10^{-5}} \right)^3 \stackrel{\text{Teacher}}{=} \left(10^{-3-(-5)} \right)^3 = \left(10^2 \right)^3 = 10^{2 \cdot 3} = 10^6 = \underline{\underline{1000000}} \quad \checkmark$$

$$\underbrace{\hspace{10em}}_{\text{Anunka}} = \frac{\left(10^{-3} \right)^3}{\left(10^{-5} \right)^3} = \frac{10^{(-3) \cdot 3}}{10^{(-5) \cdot 3}} = \frac{10^{-9}}{10^{-15}} =$$

$$= 10^{-9-(-15)} = 10^6 = \underline{\underline{1000000}} \quad \checkmark$$

$$c) \quad \left(6^{-2}\right) \cdot \left(6^{-2}\right)^{-1} \xrightarrow{\text{1 way}} \underbrace{\left(6^{-2}\right)^1 \cdot \left(6^{-2}\right)^{-1}}_{\text{Product of powers w/ = base}} = \left(6^{-2}\right)^{1-1} = \left(6^{-2}\right)^0 = \underline{\underline{1}} \checkmark$$

|| 2nd way
 $\left(6^{-1}\right)^{-1}$ is power of a power

$$6^{-2} \cdot 6^{(-2) \cdot (-1)}$$

$$\parallel \\ 6^{-2} \cdot 6^2 = 6^{-2+2} = 6^0 = \underline{\underline{1}} \checkmark$$

$$d) \left(\frac{5^{-3}}{5^4} \right)^{-1} = \left(5^{-3-4} \right)^{-1} = \left(5^{-7} \right)^{-1} = 5^{(-7)(-1)} = 5^7$$

$$= \underline{\underline{78125}}$$

why calculator

2nd way

$$\left(\frac{5^{-3}}{5^4} \right)^{-1} = \frac{(5^{-3})^{-1}}{(5^4)^{-1}} = \frac{5^{(-3)(-1)}}{5^{4 \cdot (-1)}} = \frac{5^3}{5^{-4}} = 5^{3-(-4)} = 5^7 = \underline{\underline{78125}}$$