

UNIT 2: POWERS AND ROOTS

1.- Calculate the following powers:

a) $(-5)^2 = (\quad) =$

b) $(-5)^{-2} = (\quad)^{-2} = (\frac{\quad}{\quad}) = \text{---}$

c) $(-\frac{2}{3})^{-3} = (\frac{\quad}{\quad})^{-3} = (\frac{\quad}{\quad}) = \text{---} = \text{---}$

d) $(-\frac{4}{7})^2 = (\frac{\quad}{\quad})^2 = \text{---} = \text{---}$

e) $-7^2 =$

f) $11^{-3} = \text{---} = \text{---}$

g) $((-5)^{-2})^2 = (-5) = (\quad) = \text{---} = \text{---}$

h) $(-\frac{1}{4})^{-4} = (\frac{1}{4})^{-4} = (\quad) =$

i) $(5 - \frac{7}{2})^{-2} \cdot (\frac{1}{2} + 1)^5 = (\text{---} - \text{---}) : (\text{---} + \text{---}) = (\text{---}) : (\text{---}) =$
 $= (\text{---}) = (\text{---}) = \text{---}$

2.- Express as a single power:

a) $\frac{2^3 \cdot 2^{-7}}{2^{-5}} = \frac{2^3 \cdot \quad}{\quad} = 2$

b) $\left(\frac{1}{64}\right)^{-2} = \left(\frac{1}{\quad}\right)^{-2} = \frac{1}{\quad} = 2$

c) $\frac{5^4 \cdot 2^{-3} \cdot (-3)^4 \cdot 16}{3^7 \cdot 25 \cdot 2} = \frac{5^4 \cdot 2^{-3} \cdot \quad \cdot \quad}{3^7 \cdot \quad \cdot 2} = \frac{5^4 \cdot \quad \cdot \quad}{3^7 \cdot \quad \cdot 2 \cdot \quad} = \frac{5}{3}$

3.- Where possible, remove factors from the roots:

a) $\sqrt{2^5 \cdot 3^2} = \sqrt{2 \cdot 2 \cdot 2 \cdot 3^2} = \quad \cdot \quad \sqrt{\quad} = \sqrt{\quad}$

b) $\sqrt{32 \cdot a^6} = \sqrt{2 \cdot 2 \cdot 2 \cdot a \cdot a \cdot a} = \quad \cdot \sqrt{\quad}$

c) $\sqrt[3]{81 \cdot x^3 \cdot y} = \sqrt[3]{\quad \cdot x^3 \cdot y} = \sqrt[3]{3 \cdot 3 \cdot x^3 \cdot y} = \quad \cdot \sqrt[3]{\quad}$

4.- Simplify where possible:

a) $\sqrt{2} \cdot \sqrt{7} = \sqrt{\quad}$

b) $12\sqrt{2} - 3\sqrt{2} = \quad \sqrt{2}$

c) $6\sqrt[3]{7} + \frac{4}{3}\sqrt[3]{7} + \sqrt[3]{7} = \quad \sqrt[3]{\quad}$

d) $\sqrt{3} \cdot \sqrt[3]{9} = \sqrt[6]{\quad} \cdot \sqrt[6]{3} = \sqrt[6]{\quad} = 3 \sqrt[6]{3}$