

UNIT 2: POWERS AND ROOTS

1.- Calculate the following powers:

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

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

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

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

e) $-7^2 =$

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

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

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

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

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:

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

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

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

4.- Simplify where possible:

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

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

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

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