

Name:

First Law of Exponents Worksheet

Use the product rule to simplify

[1] $(23)^{2n} \times (23)^{6n}$

[2] $(-3)^{-49} \times (-3)^{95}$

[3] $\left(\frac{2}{3}\right)^4 \times \left(\frac{2}{3}\right)^{-9}$

[4] $(-13)^0 \times (-13)^{-19}$

[5] $\left(-\frac{7}{4}\right)^8 \times \left(-\frac{7}{4}\right)^{-12}$

[6] $\left(\frac{9}{7}\right)^{23} \times \left(\frac{9}{7}\right)^{-97}$

[7] $(-9)^{-90} \times (-9)^{-47}$

[8] $\left(-\frac{3}{7}\right)^{\frac{x}{2}} \times \left(-\frac{3}{7}\right)^2$

[9] $(-22)^{x+7} \times (-22)^7$

[10] $\left(\frac{x}{2}\right)^{22} \times \left(\frac{x}{2}\right)^{10}$

[11] $\left(-\frac{7}{6}\right)^8 \times \left(-\frac{7}{6}\right)^{10}$

[12] $(-5x)^2 \times (-5x)^3$

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Answers

$$[1] (23)^{2n} \times (23)^{6n}$$

$$23^{8n}$$

$$[2] (-3)^{-49} \times (-3)^{95}$$

$$3^{46}$$

$$[3] \left(\frac{2}{3}\right)^4 \times \left(\frac{2}{3}\right)^{-9}$$

$$\frac{2^{-13}}{3}$$

$$[4] (-13)^0 \times (-13)^{-19}$$

$$-\frac{1}{13^{19}}$$

$$[5] \left(-\frac{7}{4}\right)^8 \times \left(-\frac{7}{4}\right)^{-12}$$

$$\frac{256}{2401}$$

$$[6] \left(\frac{9}{7}\right)^{23} \times \left(\frac{9}{7}\right)^{-97}$$

$$\left(\frac{7}{9}\right)^{74}$$

$$[7] (-9)^{-90} \times (-9)^{-47}$$

$$-9^{-137}$$

$$[8] \left(-\frac{3}{7}\right)^{\frac{x}{2}} \times \left(-\frac{3}{7}\right)^2$$

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

$$[9] (-22)^{x+7} \times (-22)^7$$

$$(-22)^{x+14}$$

$$[10] \left(\frac{x}{2}\right)^{22} \times \left(\frac{x}{2}\right)^{10}$$

$$\left(\frac{x}{2}\right)^{32}$$

$$[11] \left(-\frac{7}{6}\right)^8 \times \left(-\frac{7}{6}\right)^{10}$$

$$\left(\frac{7}{6}\right)^{18}$$

$$[12] (-5x)^2 \times (-5x)^3$$

$$-3125x^5$$