

$$1. 5x^4y^4 \cdot 4x^{-3}y^5$$

$$5 \cdot 4 x^4 x^{-3} y^4 y^5$$

$$20x^7y^9$$

$$2. \quad -5x^4 \cdot 2x^{-4}y^2$$

$$-5 \cdot 2x^4x^{-4}y^2$$

$$-7x^0y^2$$

$$\boxed{-7y^2}$$

$$3. (3uv^2)^{-2}$$

$$3^{-2}u^{-2}v^{-4}$$

$$\frac{1}{3^2u^2v^4} = \boxed{\frac{1}{6u^2v^4}}$$

4.

$$\frac{y^0}{4x^{-2}y^4}$$

$$\frac{4x^2y^0}{y^4}$$

$$\boxed{\frac{4x^2}{y^4}}$$