

Simplify each of the following.

1. $\frac{2x^5y^{-2}}{8xy}$

2. $\left(\frac{36m^2n^3}{12mn^{-1}}\right)^2$

3. $\left(\frac{6r^0x^{-3}y^4}{15x^4m}\right)^{-3}$

$$4. \frac{3x^3y^4w^{-2}}{4x^2y^{-8}}$$

$$5. \left(\frac{2x^{-2}y^{43}w^{-2}}{6x^2y^0} \right)^3$$

$$6. \left(\frac{4^{-2}r^{-3}y^{-5}}{3^{-1}x^{-4}y^{-5}} \right)^{-2}$$

Solve for x in each of the following.

7. $4^x = 16$

8. $(25^x)(125^x) = 5^{10}$

9. $3(27^x)(243^{2x}) = 3^5$

10. $(2^{x^2})\left(\frac{1}{32^x}\right) = 2^6$