

Dividing Exponents

Rule: $\frac{X^a}{X^b} = X^{a-b}$

Example: $\frac{X^6}{X^4} = X^{6-4} = X^2$

$\frac{X^3}{X^{-2}} = X^{3-(-2)} = X^5$

Divide the following polynomials.

1. $\frac{X^3}{X}$

$X^{3-1} = X^2$

11. $\frac{18c^3}{-3c^2}$

$-6c$

2. $\frac{9a^3b^5}{-3ab^2}$

$-3a^2b^3$

12. $\frac{-48c^2d^4}{-8cd}$

$6cd^3$

3. $\frac{d^5}{d^3}$

d^2

13. $\frac{22y^5z^8}{2yz^7}$

$11y^4z$

4. $\frac{b^{14}c^9}{b^5c^4}$

b^9c^5

14. $\frac{28x^2y}{-4x^2}$

$-7y$ or $\frac{7y}{-1}$

5. $\frac{-12m^5}{6m}$

$-2m^4$

15. $\frac{-3p^8}{6p^2}$

$-\frac{p^6}{2}$ or $\frac{-p^6}{2}$

6. $\frac{15k^7r^3}{-3k^5}$

$-5k^2r^3$

16. $\frac{42r^{13}}{-7r^8}$

$-6r^5$

7. $\frac{9a^{13}}{a^3}$

$9a^{10}$

17. $\frac{(6x^3)(4x^9)}{-12x^{10}}$

$\frac{24x^{12}}{-12x^{10}} = -2x^2$

8. $\frac{(3xy)(4x^2y)}{-6xy^2}$

$\frac{12x^3y^2}{-6xy^2} = -2x^2$

18. $\frac{21k^9}{(3k)(7k^9)}$

$\frac{21k^9}{21k^{10}} = k^{-1}$

9. $\frac{-14c^{15}d^3}{-2c^9d}$

$7c^6d^2$

19. $\frac{4x^2y^3z^4}{2xy^2z^3}$

$2xyz$

10. $\frac{(5k)(-8k^5)}{10k^3}$

$\frac{-40k^6}{10k^3} = -4k^3$

20. $\frac{(121c^3)(-10^8)}{11c^5}$

$\frac{-121c^{11}}{11c^5} = -11c^6$