

Precalculus
P.1: Real Numbers (Inequalities and Exponent Rules)

Name:
Period:

PART I: INEQUALITIES

Inequality Notation	Graph	Written Description	Interval Notation	Interval Type
$-2 \leq x \leq 5$		x is Greater than or = to -2 & less than or = to 5	$[-2, 5]$	Closed, Bounded
$3 < x \leq 9$			$(3, 9]$	Half open, Bounded
$x > 1$			$(1, \infty)$	open unbounded
$x \leq -5$			$(-\infty, -5]$	closed, Unbounded
$-5 \leq x < 1$			$[-5, 1)$	half open, bounded
$-2 < x < 1$			$(-2, 1)$	open, bounded
$x < 5$			$(-\infty, 5)$	open, Unbounded
$5 < x \leq 9$		x is greater than 5 and less than or equal to 9	$(5, 9]$	half open, bounded
$x \leq -2$ or $x > 3$			$(-\infty, -2] \cup (3, \infty)$	Interval Type

PART II: EXPONENT PROPERTIES

$$(3x^3 y^4 \cdot 7x^{1/4} y^2)^0 = 1$$

Property	Examples	You Try!
$u^m u^n = u^{m+n}$	1. $3^2 \cdot 3^1 = 3^3$	2. $x^5 \cdot x^2 = x^7$
$\frac{u^m}{u^n} = u^{m-n}$	3. $\frac{m^4}{m^3} = m^1$	4. $\frac{2^6}{2^3} = 2^3$
$u^0 = 1$	5. $8^0 = 1$ $\frac{x^8}{x^8} = x^0$	6. $z^{-2} z^2 = z^0 = 1$
$u^{-n} = \frac{1}{u^n}$	7. $4^{-1} = \frac{1}{4}$ $\frac{4^8}{4^9}$	8. $\frac{x^5}{x^7} = x^{-2} = \frac{1}{x^2}$
$(uv)^m = u^m v^m$	9. $(jk)^2$ $2 \cdot 2$	10. $(2x)^3$ $2^3 x^3$

u^n	4^n	x^n
$(uv)^m = u^m v^m$	9. $(jk)^2 = j^2 k^2$	10. $(2x)^3 = 2^3 x^3$
$(u^m)^n = u^{mn}$	11. $(3m^3)^2 = 3^2 m^6$	12. $(x^2 y)^4 = x^8 y^4$
$\left(\frac{u}{v}\right)^m = \frac{u^m}{v^m}$	13. $\left(\frac{p}{k}\right)^3 = \frac{p^3}{k^3}$	14. $\left(\frac{2p^2}{3k}\right)^2 = \frac{2^2 p^4}{3^2 k^2}$

Bring These Together!

$$15. \frac{28a^2 b^3}{4ab^5} = \frac{7a}{b^2}$$

$$16. \frac{x^3}{6} \left(\frac{2}{x^4}\right)^3$$

$$17. \frac{9c^6 d^5}{-12c^2 d^8} = \frac{3d^3}{-4c^4 d^3}$$

$$\frac{x^3}{6} \cdot \frac{2^3}{x^{12}} = \frac{2^3 x^3}{6x^{12}} = \frac{2^3}{6x^9} = \frac{3d^3}{-4c^4 d^3}$$