

Properties of Inequality

<p>Addition and Subtraction Properties of Inequality (pp. 357, 358) Adding or subtracting the same number on each side of an inequality produces an equivalent inequality.</p>	<p>If $a < b$, then $a + c < b + c$ and $a - c < b - c$.</p> <p>If $a > b$, then $a + c > b + c$ and $a - c > b - c$.</p>
<p>Multiplication and Division Properties of Inequality (pp. 363, 364) Multiplying or dividing each side of an inequality by a <i>positive</i> number produces an equivalent inequality. Multiplying or dividing each side of an inequality by a <i>negative</i> number and <i>reversing the direction of the inequality symbol</i> produces an equivalent inequality.</p>	<p>If $a < b$ and $c > 0$, then $ac < bc$ and $\frac{a}{c} < \frac{b}{c}$.</p> <p>If $a < b$ and $c < 0$, then $ac > bc$ and $\frac{a}{c} > \frac{b}{c}$.</p>

Properties of Exponents

<p>Product of Powers Property (p. 489) To multiply powers having the same base, add the exponents.</p>	$a^m \cdot a^n = a^{m+n}$
<p>Power of a Power Property (p. 490) To find a power of a power, multiply exponents.</p>	$(a^m)^n = a^{mn}$
<p>Power of a Product Property (p. 490) To find a power of a product, find the power of each factor and multiply.</p>	$(ab)^m = a^m b^m$
<p>Quotient of Powers Property (p. 495) To divide powers having the same nonzero base, subtract exponents.</p>	$\frac{a^m}{a^n} = a^{m-n}, a \neq 0$
<p>Power of a Quotient Property (p. 496) To find a power of a quotient, find the power of the numerator and the power of the denominator and divide.</p>	$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}, b \neq 0$

Other Properties

<p>Cross Products Property (p. 168) The cross products of a proportion are equal.</p>	If $\frac{a}{b} = \frac{c}{d}$ ($b, d \neq 0$), then $ad = bc$.
<p>Product Property of Radicals (p. 719) The square root of a product equals the product of the square roots of the factors.</p>	$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}, a \geq 0$ and $b \geq 0$
<p>Quotient Properties of Radicals (p. 720) The square root of a quotient equals the quotient of the square roots of the numerator and denominator.</p>	$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}, a \geq 0$ and $b > 0$