

Algebraic Basics for Geometry

1/. Evaluate the numerical expression.

$$(1) 2.5 \times (2 - (-6)) - (-4) \div 2 =$$

$$(2) \frac{1}{2} + (1 - \frac{1}{3}) =$$

$$(3) \frac{1}{6} \div \frac{2+2}{6} =$$

$$(4) \sqrt{5^2 + 12^2} =$$

$$(5) \sqrt{(-6)^2 + (-8)^2}$$

$$(6) |-2 \times 3 - 1| =$$

2/. Solve for x

$$(1) \frac{-9+x}{4} = -4$$

$$(2) |x-1| = 2$$

$$(3) 2(3x+1) = 5x+14$$

$$(4) (2x+10) + (13x-4) - (5x-6) - 2(4x+7) = 2$$

$$(5) x^2 = 16$$

$$(6) x^3 = -27$$

3/. Solve the inequality

$$(1) 3x \geq 6$$

$$(2) -4x < -20$$

$$(3) 2x+3 < 3x+4$$

$$(4) |x| < 3$$

4/ True or False

[] (1) If $x=2$, $y=3$, then $3x-2y=0$

[] (2) If $x^2=1$, then $x=1$.

[] (3) If x is the reciprocal of -2 , then $x=0.5$

[] (4) If Lee is John's son, then John is Lee's parent.

[] (5) If John is Lee's parent, then Lee is John's son.

[] (6) If $a=b$ and $b=c$, then $a=c$.

[] (7) If $a>b$ and $c<b$, then $a>c$.

[] (8) If $a>c$ and $b=d$, then $a+b>c+d$

[] (9) If an operation sends x to $x-2$, then after two such operations, 4 is finally sent to -4 .

[] (10) If statement 1 is true, then statement 2 is true.
If statement 2 is true, then statement 3 is true.
So we can conclude that if statement 1 is true, then statement 3 is true.

5/ Proportions.

(1) If $\frac{x}{3} = \frac{4}{5}$, then $x = ?$

(2) If $\frac{x}{3} = \frac{y}{6}$, then $\frac{x}{y} = ?$

(3) If $\frac{a}{b} = \frac{5}{3}$, then $\frac{3b}{2a} = ?$

(4) If $\frac{a}{3} = \frac{1}{4}$, then $\frac{a+3}{3} = ?$