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Algebra School Book

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Revision paper, I

Algebra.

1(a) If  $\frac{bx-ay}{cy-az} = \frac{cx-az}{by-ax} = \frac{z+y}{x+z}$  each of these ratios =  $\frac{x}{y}$  unless  $b+c=0$ .

$$\text{Let } bx-ay = k(cy-az) \dots (1)$$

$$cx-az = k(by-ax) \dots (2)$$

$$z+y = k(x+z) \dots (3)$$

Multiplying (3) by  $a$  & adding the 3 lines

$$bx+ex = ky(b+c)$$

$$x(b+c) = ky(b+c)$$

$$\therefore \frac{x}{y} = k \text{ unless } b+c=0.$$

$\frac{x}{y}$  = each of the given fractions

2(a) If  $2x^2 - 5xy + 2y^2 = 0$ , find the ratio  $x:y$ .

$$2\left(\frac{x}{y}\right)^2 - 5\frac{x}{y} + 2 = 0$$

$\therefore$  by solving this quadratic by formula

$$\frac{x}{y} = \frac{5 \pm \sqrt{25-16}}{4} = \frac{5 \pm \sqrt{9}}{4} = \frac{5 \pm 3}{4}$$

$$= \frac{8}{4} \text{ or } \frac{2}{4}$$

$$\text{Ans. } \frac{x}{y} = 2 \text{ or } \frac{1}{2} = 2 \text{ or } \frac{1}{2}$$