

Ex 1.4 $\left(\frac{bx_1 + ax_2}{b+a}, \frac{by_1 + ay_2}{b+a} \right)$

Q1 $(-3, 4) (5, -4) \quad 4:1 \quad (\text{Internally})$

$$\left(\frac{1(-3) + 4(5)}{1+4}, \frac{1(4) + 4(-4)}{1+4} \right)$$

$$\left(\frac{-3+20}{5}, \frac{4-16}{5} \right)$$

$$\left(\frac{17}{5}, \frac{-12}{5} \right)$$

Q2 $(-5, 8) (3, -8) \quad 3:1 \quad (\text{Internally})$

$$\left(\frac{1(-5) + 3(3)}{1+3}, \frac{1(8) + 3(-8)}{1+3} \right)$$

$$\left(\frac{-5+9}{4}, \frac{8-24}{4} \right)$$

$$\left(\frac{4}{4}, \frac{-16}{4} \right)$$

$$(1, -4)$$

Q3 $(2, -3) (4, 6) \quad 5:2 \quad (\text{Externally})$

$$\left(\frac{2(2) - 5(4)}{2-5}, \frac{2(-3) - 5(6)}{2-5} \right)$$

$$\left(\frac{4-20}{-3}, \frac{-6-30}{-3} \right)$$

$$\left(\frac{-16}{-3}, \frac{-36}{-3} \right)$$

$$\left(\frac{16}{3}, 12 \right)$$

Q4 $(5, 0)$ $(1, -2)$ 3:2

Internally $\left(\frac{2(5) + 3(1)}{2+3}, \frac{2(0) + 3(-2)}{2+3} \right)$

$$\left(\frac{10+3}{5}, \frac{0-6}{5} \right)$$

$$\left(\frac{13}{5}, \frac{-6}{5} \right)$$

Externally $\left(\frac{2(5) - 3(1)}{2-3}, \frac{2(0) - 3(-2)}{2-3} \right)$

$$\left(\frac{10-3}{-1}, \frac{0+6}{-1} \right)$$

$$(-7, -6)$$

Q5 $(2, 3)$ $(5, 7)$ 3:1

Internally $\left(\frac{1(2) + 3(5)}{1+3}, \frac{1(3) + 3(7)}{1+3} \right)$

$$\left(\frac{2+15}{4}, \frac{3+21}{4} \right)$$

$$\left(\frac{17}{4}, 6 \right)$$

Externally $\left(\frac{1(2) - 3(5)}{1-3}, \frac{1(3) - 3(7)}{1-3} \right)$

$$\left(\frac{2-15}{-2}, \frac{3-21}{-2} \right)$$

$$\left(\frac{13}{2}, 9 \right)$$

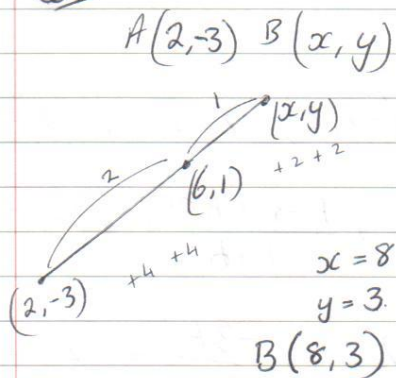
Q6 $(-2, -1)$ $(3, 4)$ 4:1 produced to \Rightarrow externally

$$\left(\frac{1(-2) - 4(3)}{1-4}, \frac{1(-1) - 4(4)}{1-4} \right)$$

$$\left(\frac{-2-12}{-3}, \frac{-1-16}{-3} \right)$$

$$\left(\frac{+14}{3}, \frac{17}{3} \right)$$

Q7



$(2, -3)$ (x, y) 2:1 \rightarrow 6, 1

$$\left(\frac{1(2) + 2(x)}{1+2}, \frac{1(-3) + 2(y)}{1+2} \right) = (6, 1)$$

$$\frac{2+2x}{3} = 6 \quad \frac{-3+2y}{3} = 1$$

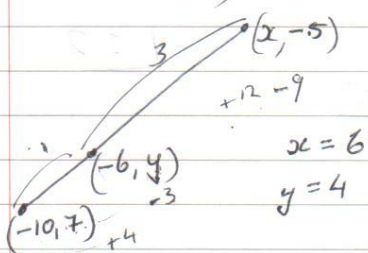
$$2+2x = 18 \quad -3+2y = 3$$

$$2x = 16 \quad 2y = 6$$

$$x = 8 \quad y = 3$$

(8, 3)

Q8 P(-6, y) A(-10, 7) B(x, -5)



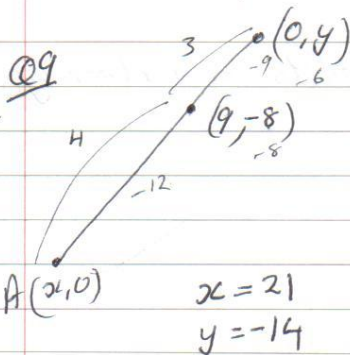
$$\left(\frac{3(-10) + 1(x)}{3+1}, \frac{3(7) + 1(-5)}{3+1} \right) = (-6, y)$$

$$\frac{-30+x}{4} = -6 \quad \frac{21-5}{4} = y$$

$$-30+x = -24 \quad \frac{16}{4} = y$$

$$x = 6 \quad 4 = y$$

$x = 6$ and $y = 4$



$$(x, 0) \quad (0, y) \quad 4:3 \quad \text{is } (9, -8)$$

$$\left(\frac{3x + 4(0)}{3+4}, \frac{3(0) + 4y}{3+4} \right) = 9, -8$$

$$\frac{3x}{7} = 9$$

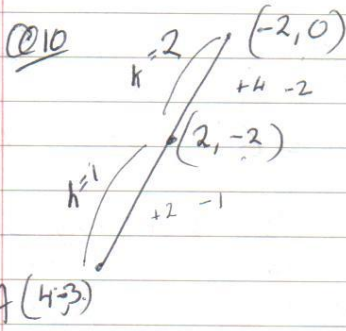
$$3x = 63$$

$$x = 21$$

$$\frac{4y}{7} = -8$$

$$4y = -56$$

$$y = -14$$



$$(4, -3) \quad (-2, 0) \quad k:1 \quad \text{is } (2, -2)$$

$$\left(\frac{k(4) + 1(-2)}{k+1}, \frac{k(-3) + 1(0)}{k+1} \right) = (2, -2)$$

$$\frac{4k - 2}{k+1} = 2$$

$$\frac{-3k}{k+1} = -2$$

$$4k - 2 = 2k + 2$$

$$2k = 4$$

$$2 : 4$$

$$\underline{1 : 2}$$

$$-3k = -2k - 2$$

$$-k = -2$$

$$k = 2$$

$$\underline{1 : 2}$$