1. a) $y = 3x + 10$, $x^2 + y^2 = 12$

$$x^2 + (3x+10)^2 \cancel{xy^2} = 12$$

$$x^2 + 9x^2 + 30x + 30x + 100 - 12 = 0$$

$$\frac{10x^2}{2} + \frac{60x}{2} - \frac{88}{2} = \frac{0}{2}$$

$$5x^2 + 30x - 44 = 0$$

$$x = \frac{-30 \pm \sqrt{30^2 - 4(5)(44)}}{2(5)}$$

$$x = \frac{-30 \pm \sqrt{1780}}{10}$$

$$x = \frac{-30 \pm 2\sqrt{445}}{10}$$

$$x = \frac{-\cancel{15} 5 \pm \sqrt{445}}{5}$$

$x = 1,22$ $x = -7,22$

$y = 13,66$ $y = -11,66$

$$d = \sqrt{(13,66 - -11,66)^2 + (1,22 - -7,22)^2}$$

$$= \sqrt{641,1 + 71,2}$$

$$= \sqrt{712,3}$$

$$= 26,7$$

b) $x + 2y + 1 = 0$ $(x+2)^2 + (y-3)^2 = 5$

$x = -2y - 1$

$$(-2y - 1 + 2)^2 + (y-3)^2 = 5$$

$$(-2y + 1)^2 + (y-3)^2 = 5$$

$$4y^2 - 4y + 1 + y^2 - 6y + 9 - 5 = 0$$

$$\frac{5y^2 - 10y + 5}{5} = \frac{0}{5}$$

$$y^2 - 2y + 1 = 0$$

$$(y - 1)(y - 1) = 0$$

$$y = 1$$

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

$$x = -3$$

$(-3, 1)$ Un seul pt.

2. x : le 1er nombre

y : le 2^e nombre

$$y - x = 12 \longrightarrow y = x + 12$$

$$x^2 + y^2 = 410$$

$$x^2 + (x + 12)^2 = 410$$

$$x^2 + x^2 + 12x + 12x + 144 - 410 = 0$$

$$\frac{2x^2}{2} + \frac{24x}{2} - \frac{266}{2} = \frac{0}{2}$$

$$x^2 + 12x - 133 = 0 \qquad 19 \times 7 = 133$$

$$(x + 19)(x - 7) = 0 \qquad 19 + 7 = 12$$

$x = -19 \qquad x = 7$

$y = -7 \qquad y = 19$

Les nombres sont −19 et −7   ou   7 et 19.

3.

$(h, k) = (6, 6)$

$x + 2y = 1$
$x = -2y + 1$

$r = 6$
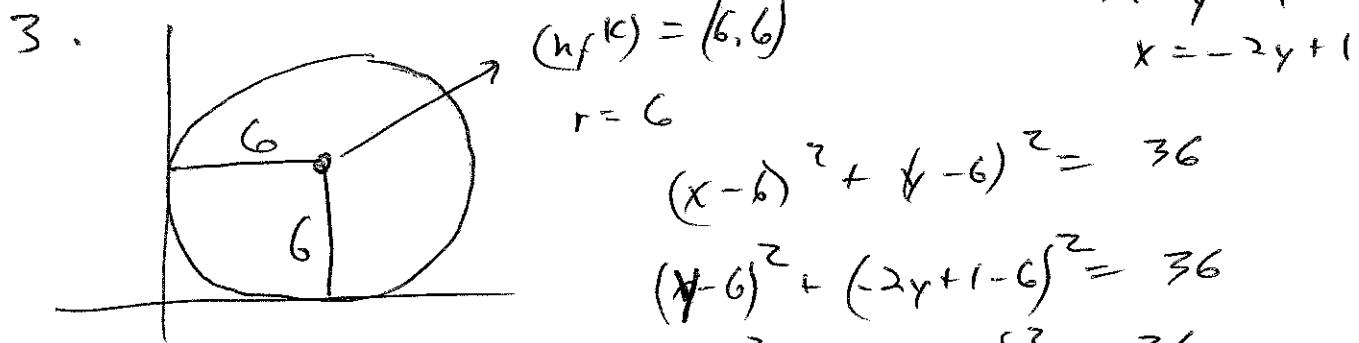
$(x - 6)^2 + (y - 6)^2 = 36$

$(x - 6)^2 + (-2y + 1 - 6)^2 = 36$

$(x - 6)^2 + (-2y - 5)^2 = 36$

$x^2 - 12x + 36 + 4y^2 + 20y + 25 - 36 = 0$

$5y^2 + 8y + 25 = 0$

$y = \dfrac{-8 \pm \sqrt{8^2 - 4(5)(25)}}{2(5)}$

$y = \dfrac{-8 \pm \sqrt{-436}}{10} \leftarrow$

Aucun pt
d'intersection.

4.

$A(-6, -8)$

$AB \rightarrow 7$ parties

déplacement horizontal: $8 - -6 = 14$

$\dfrac{14}{7} = 2$

déplacement vertical: $6 - -8 = 14$

$\dfrac{14}{7} = 2$

$E = (-6 + 4(2), \; -8 + 4(2))$

$E = (2, 0)$
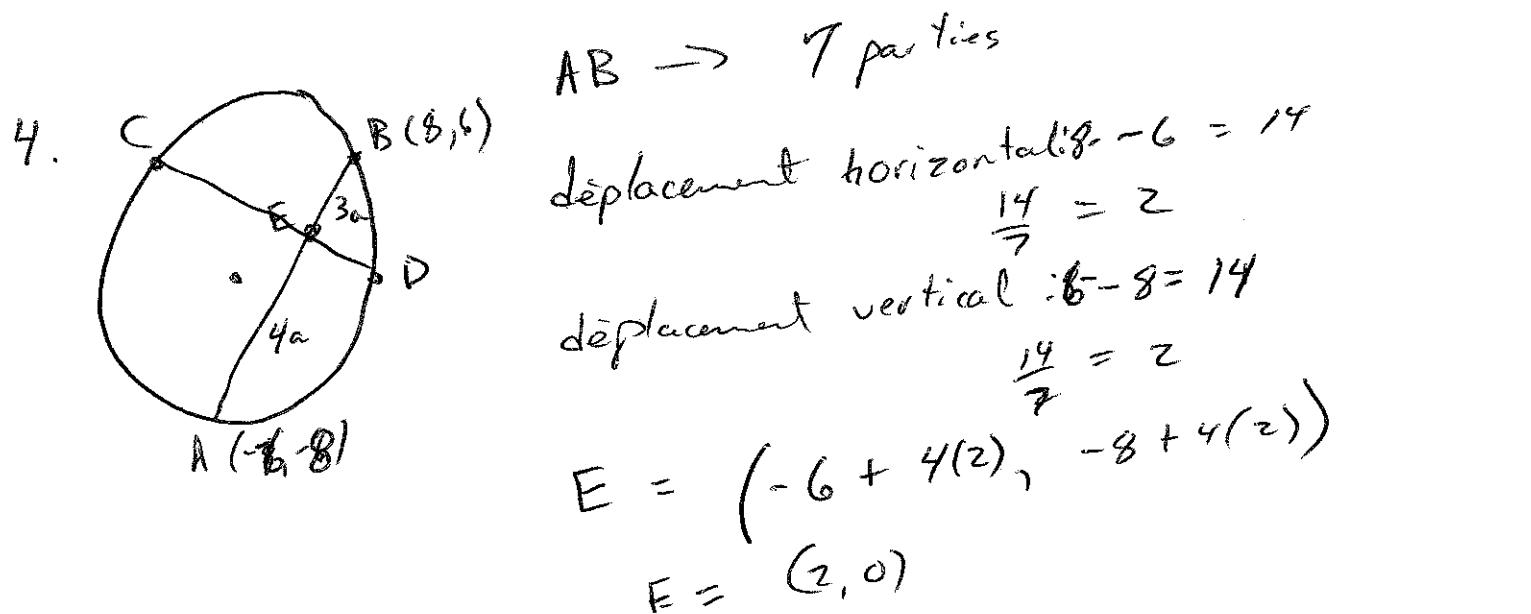
$m_{AB} = \dfrac{6 - -8}{8 - -6}$

$= \dfrac{14}{14}$

$= 1$

$m_{CD} = -1$

$y = -x + b \quad$ passe par $E(2, 0)$

$0 = -2 + b$

$b = 2$

$y = -x + 2, \quad x^2 + y^2 = 100$

$$x^2 + (-x+2)^2 = 10$$
$$x^2 + x^2 - 4x + 4 - 100 = 0$$
$$2x^2 - 4x - 96 = 0$$
$$x^2 - 2x - 48 = 0$$
$$(x-8)(x+6) = 0$$

$$x = 8 \qquad x = -6$$

$$y = -8 + 2 \qquad y = -(-6) + 2$$
$$y = -6 \qquad\quad y = 8$$

$$d = \sqrt{(8--6)^2 + (-6-8)^2}$$
$$d = \sqrt{196 + 196}$$
$$d = 14\sqrt{2}$$

5. $(x-8)^2 + y^2 = 15 \qquad y = x - 3$

$$(x-8)^2 + (x-3)^2 = 15$$
$$x^2 - 16x + 64 + x^2 - 6x + 9 - 15 = 0$$
$$2x^2 - 22x + 58 = 0$$
$$x^2 - 11x + 29 = 0$$

$$x = \frac{11 \pm \sqrt{(-11)^2 - 4(1)(29)}}{2(1)}$$

$$x = \frac{11 \pm \sqrt{5}}{2}$$

$$x = 6.61 \qquad\qquad x = 4.38$$
$$y = 3.61 \qquad\qquad y = 1.38$$

$$d = \sqrt{(6.61 - 4.38)^2 + (3.61 - 1.38)^2}$$
$$d = \sqrt{9.94}$$
$$d = 3.15 \; \cup$$

Q.

$$(x-70)^2 + (y-10)^2 = 100$$

Centre $(70, 10)$
rayon $= 10$

$y = 0.05x$

$P(0,0)$
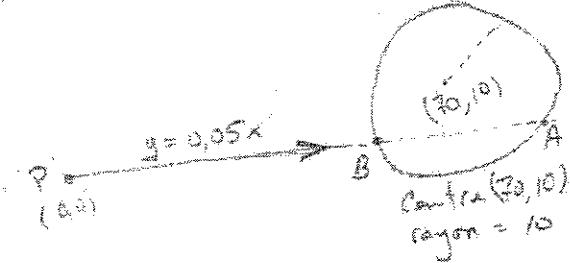
Par substitution

$(x-70)^2 + (0.05x - 10)^2 - 100 = 0$

$x^2 - 140x + 4900 + 0.0025x^2 - x + 100 - 100 = 0$

$1.0025x^2 - 141x + 4900 = 0$

$$x = \frac{141 \pm \sqrt{(141)^2 - 4(1.0025)(4900)}}{2(1.0025)}$$

$x = 77.92$ $\neq$ $x = 62.73$

$y = 0.05(77.92)$ $\qquad$ $y = 0.05(62.73)$
$\quad = 3.896$ $\qquad\qquad = 3.14$

$A(77.92, 3.896)$ $\neq$ $B(62.73, 3.14)$

$$\overline{PA} = \sqrt{(77.92 - 0)^2 + (3.896 - 0)^2}$$

$= 78.02\,m$

$$\overline{PB} = \sqrt{(62.73 - 0)^2 + (3.14 - 0)^2}$$

$= 62.81\,m$

Le ballon parcours un distance de 75m et $62.81m < 75m < 78.02m$ donc son équipier devrait capter la passe du quartarière

7.

$$6x + 5y = 60 \implies x = -\frac{5}{6}y + 10$$

$$x^2 + (y-5)^2 = 49$$

$$\left(-\frac{5}{6}y + 10\right)^2 + (y-5)^2 = 49$$

$$\frac{25}{36}y^2 \overset{\times 36}{} + \frac{50}{3}y \overset{\times 36}{} + 100 \overset{\times 36}{} + y^2 \overset{\times 36}{} - 10y \overset{\times 36}{} + 25 \overset{\times 36}{} - 49 \overset{\times 36}{} = 0$$

$$25y^2 - 600y + 3600 + 36y^2 - 360y + 900 - 1764 = 0$$

$$61y^2 - 960y + 2736 = 0$$

$$y = \frac{960 \pm \sqrt{(960)^2 - 4(61)(2736)}}{2(61)}$$

$$y = \frac{960 \pm 504}{122}$$

$$y = 12 \qquad\qquad y = 3,74$$

$$x = 0 \qquad\qquad x = 6,89$$

$$d = \sqrt{(6,89 - 0)^2 + (3,74 - 13)^2}$$

$$d = \sqrt{47,47 + 68,23}$$

$$d = 10,75 \ km$$

$$v = \frac{d}{t}$$

$$= \frac{10,75}{45/3600}$$

$$= 860 \ km/h.$$

8.

$$x + 2y - 18 = 0 \Rightarrow x = -2y + 18$$

$$y = -\frac{x}{2} + 9 \qquad (x-2)^2 + (y-3)^2 = 25$$

$$(-2y + 18 - 2)^2 + (y-3)^2 = 25$$

$$(-2y + 16)^2 + (y-3)^2 = 25$$

$$4y^2 - 64y + 256 + y^2 - 6y + 9 - 25 = 0$$

$$5y^2 - 70y + 240 = 0$$

$$y^2 - 14y + 48 = 0$$

$$(y - 6)(y - 8) = 0$$

$$y = 6 \qquad y = 8$$

$$x = -2(6) + 18 \qquad x = -2(8) + 18$$

$$x = 6 \qquad x = 2$$

$$d = \sqrt{(6-2)^2 + (6-8)^2}$$
$$= \sqrt{16 + 4}$$
$$= \sqrt{20}$$
$$= 2\sqrt{5}$$

donc

arc = ?
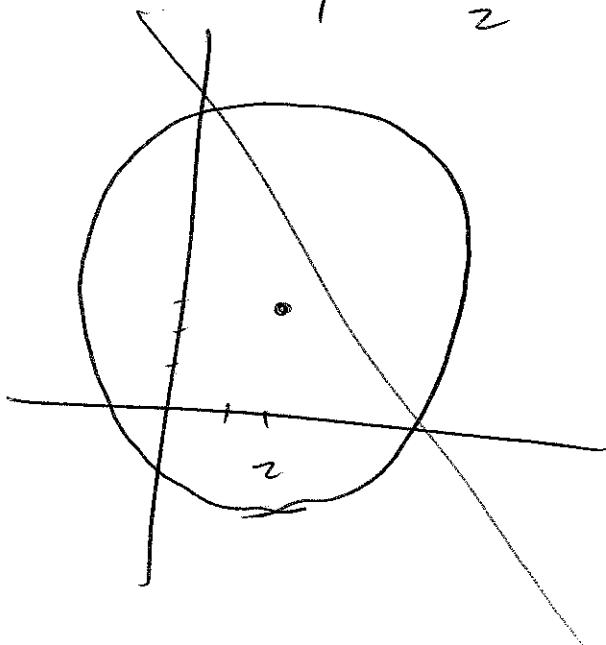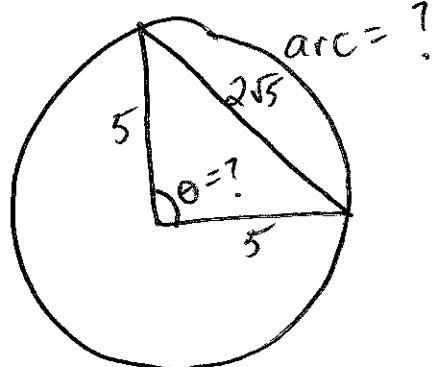
loi des cosinus

~~cosθ =~~

$$(2\sqrt{5})^2 = 5^2 + 5^2 - 2(5)(5)\cos\theta$$

$$\frac{20 - 25 - 25}{-50} = \cos\theta$$

$$\cos\theta = 0{,}6$$

$$\theta = 53{,}1°$$

$$\frac{Arc}{2\pi r} = \frac{53{,}1}{360}$$

$$Arc = \frac{53{,}1}{360} \times 2\pi \times 5 \qquad Arc = 4{,}63$$

9.
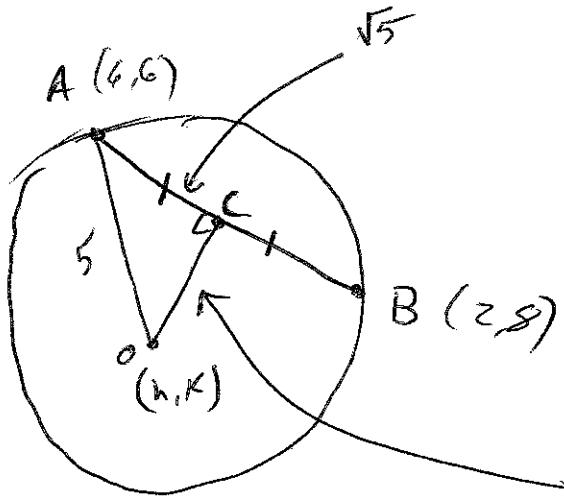
$$d_{AB} = \sqrt{(6-2)^2 + (6-8)^2}$$
$$= \sqrt{4^2 + 2^2}$$
$$= \sqrt{20}$$
$$= 2\sqrt{5}$$

A (6,6)

$\sqrt{5}$

C

5

B (2,8)

O (h,K)

d_{oc} => soit $d_{oc} = l$

$$l^2 + (\sqrt{5})^2 = 5^2$$
$$l^2 = 25 - 5$$
$$\sqrt{l^2} = \sqrt{20}$$
$$l = 2\sqrt{5}$$

C -> milieu de AB

$$C = \left(\frac{6+2}{2} , \frac{6+8}{2} \right)$$

$$= (4, 7)$$

$OC \perp AB$ -> $m_{AB} = \frac{8-6}{2-6}$ $M_{oc} = 2$

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

$y = 2x + b$, passe par $C(4,7)$

$$7 = 2(4) + b$$
$$7 = 8 + b$$
$$b = -1$$

Quels pts sur $y = 2x - 1$ sont à $2\sqrt{5}$ de C ?

$$2\sqrt{5} = \sqrt{(x-4)^2 + (y-7)^2}$$ (formule de distance)

$$20 = (x-4)^2 + (y-7)^2 \quad \cdots \quad y = 2x-1$$
$$20 = (x-4)^2 + (2x-8)^2$$
$$20 = x^2 - 8x + 16 + 4x^2 - 32x + 64$$
$$0 = 5x^2 - 40x + 60$$
$$0 = x^2 - 8x + 12$$
$$0 = (x-2)(x-6)$$

$x = 2$, $x = 6$

$y = 2(2)-1$ $y = 2(6)-1$
$y = 3$ page $y = 11$

Les équations possibles sont:
$$1)\ (x-2)^2 + (y-3)^2 = 25$$
$$2)\ (x-6)^2 + (y-11)^2 = 25.$$