ENCONTRAR AS TANGENTES COMUNS AOS CÍRCULOS

1 $(0,0)$ $R=1$
$(4,2)$ $R=2$

2 $(0,0)$ $R=1$
$\frac{3}{\sqrt{5}}(2,1)$ $R=2$

1

$$a^2+1=b^2$$

$$(a^2+1)4=(4a+b-2)^2$$

$$4b^2=(4a+b-2)^2 \Rightarrow \pm 2b=4a+b-2$$

$$b=2(2a-1) \qquad b=\frac{2(1-2a)}{3}$$

2

$$a^2+1=b^2$$

$$(a^2+1)4=\left(\frac{6}{\sqrt{5}}a+b-\frac{3}{\sqrt{5}}\right)^2$$

$$4b^2=\left(\frac{6}{\sqrt{5}}a+b-\frac{3}{5}\right)^2$$

$$b=\frac{3}{\sqrt{5}}(2a-1) \qquad b=\frac{1-2a}{\sqrt{5}}$$

para calcular a usaremos $\longrightarrow$ $\boxed{a^2+1=b^2}$

$$\boxed{b=2(2a-1)} \longrightarrow a^2+1=4(4a^2+1-4a)$$

$$15a^2-16a+3=0$$

$$\boxed{a=\frac{8\pm\sqrt{19}}{15}} \longleftarrow 15a^2-16a+3=0$$

$$\boxed{b=\frac{2(1-2a)}{3}} \longrightarrow a^2+1=\frac{4}{9}(4a^2+1-4a)$$

$$\boxed{a=\frac{8\pm 3\sqrt{11}}{7}} \longleftarrow 7a^2-16a-5=0$$

$$\boxed{b=\frac{3}{\sqrt{5}}(2a-1)} \longrightarrow a^2+1=\frac{9}{5}(4a^2+1-4a)$$

$$\boxed{a=\frac{18\pm 10\sqrt{2}}{31}} \longleftarrow 31a^2-36a+4=0$$

$$\boxed{b=\frac{1-2a}{\sqrt{5}}} \longrightarrow a^2+1=\frac{1}{5}(4a^2+1-4a)$$

$$\boxed{a=-2} \longleftarrow a^2+4a+4=0$$

Ex. aula 5 de maio de 2015