

A Solution:

Centre $(-g, -f)$

But $g = f$ [x and y axis tangents]

\Rightarrow Centre $(-g, -g)$

$$x + 2y - 6 = 0$$

$$\Rightarrow -g + 2(-g) - 6 = 0$$

$$\Rightarrow -3g = 6$$

$$\Rightarrow g = -2$$

\Rightarrow Centre = $(2, 2)$

Also Centre $(-g, g)$

$$\Rightarrow -g + 2g - 6 = 0$$

$$\Rightarrow g = 6$$

\Rightarrow Centre $(-6, 6)$

If Centre $(g, -g)$

$$\Rightarrow g + 2(-g) - 6 = 0$$

$$\Rightarrow -g - 6 = 0$$

$$\Rightarrow g = -6$$

\Rightarrow Centre $(-6, 6)$ also

The two centres are $(2, 2)$ and $(-6, 6)$