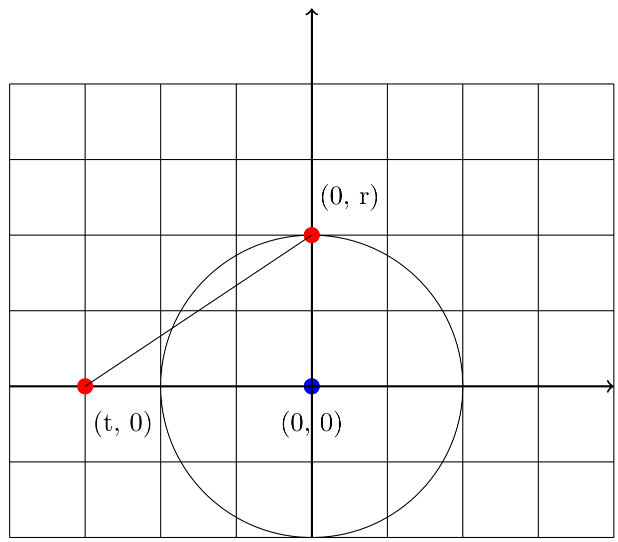

Derived circle parametic equation line equation from (0,r) to (t, 0)

$$\textit{line equatin}$$

$$\frac{y-0}{x-t} = \frac{y-r}{x-0}$$

$$\Rightarrow xy = (y-r)(x-t)$$

$$\Rightarrow xy = xy - rx - yt + rt$$

$$\Rightarrow rx = rt - yt = t(r-y)$$

$$\Rightarrow rx = t(r-y)$$

$$\Rightarrow x = \frac{t}{r}(r-y)$$

$$\textit{Let the circle equation to be}$$

$$x^2 + y^2 = r^2$$

$$\Rightarrow \left(\frac{t}{r}(r-y)\right)^2 + y^2 = r^2$$

$$\Rightarrow \left(\frac{t}{r}\right)^2 (r-y)^2 + y^2 = r^2$$

$$\Rightarrow t^2(r^2 + y^2 - 2ry) + r^2y^2 = r^4$$

$$\Rightarrow t^2r^2 + t^2y^2 - 2rt^2y + r^2y^2 = r^4$$

$$\Rightarrow (t^2 + r^2)y^2 - 2rt^2y + t^2r^2 - r^4 = 0$$

$$\Rightarrow a = (t^2 + r^2) \quad b = -2rt^2 \quad c = t^2r^2 - r^4$$

$$y = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\Rightarrow y = \frac{-2rt^2 \pm \sqrt{4r^2t^4 - 4(t^2+r^2)(t^2r^2-r^4)}}{2(t^2+r^2)}$$

$$\Rightarrow y = \frac{-2rt^2 \pm 2\sqrt{r^2t^4 - (t^4r^2 - t^2r^4 + t^2r^4 - r^6)}}{2(t^2+r^2)}$$

$$\Rightarrow y = \frac{-2rt^2 \pm 2\sqrt{r^2t^4 - t^4r^2 + t^2r^4 - t^2r^4 + r^6}}{2(t^2+r^2)}$$

$$\Rightarrow y = \frac{-2rt^2 \pm 2\sqrt{t^2r^4 - t^2r^4 + r^6}}{2(t^2+r^2)}$$

$$\Rightarrow y = \frac{-2rt^2 \pm 2r^3}{2(t^2+r^2)}$$

$$\Rightarrow y = \frac{-r(t^2 \pm r^2)}{(t^2+r^2)}$$

$$\Rightarrow y = -r \;\; or \; y = \frac{-r(t^2-r^2)}{(t^2+r^2)}$$

$$x = \frac{t}{r}(r-y)$$