$$d = \sqrt{x^2 + y^2}$$

$$d^2 = x^2 + y^2$$

$$\frac{d}{dx} d^2 = \frac{d}{dx} x^2 + \frac{d}{dx} y^2$$

$$2d\,d' = 2x + 2y\,y'$$

$$d' = \frac{x}{d} + \frac{y}{d} y'$$

$$(x + y\,y')\frac{1}{d} = 0$$

$$x + y\,y' = 0$$

$$x + \sqrt{x+4} \cdot \frac{1}{2\sqrt{x+4}} = 0$$

$$x + \frac{1}{2} = 0$$

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

$$\left(-\frac{1}{2}, \frac{\sqrt{14}}{2}\right)$$

$$y = \frac{1}{2}(x+4)^{-1/2}$$

$$= \frac{1}{2\sqrt{x+4}}$$

$$y = \sqrt{\left(-\frac{1}{2}\right) + 4}$$

$$= \sqrt{\frac{7}{2}}$$

$$= \frac{\sqrt{14}}{2}$$