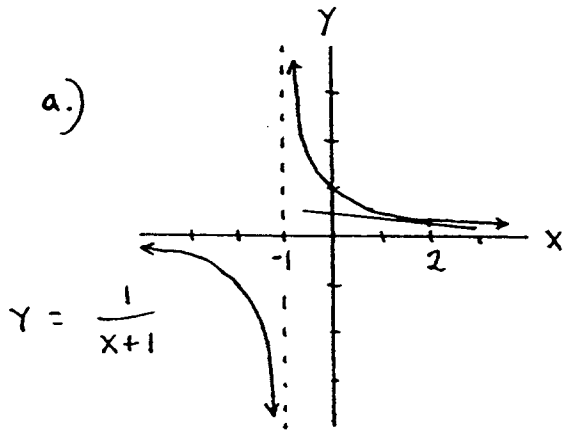


1.) a.)

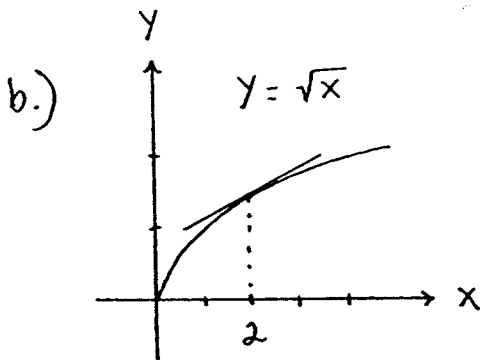


$$\frac{f(2+h) - f(2)}{h} = \frac{\frac{1}{2+h+1} - \frac{1}{3}}{\frac{h}{1}}$$

$$= \frac{3 - (3+h)}{(3+h) \cdot 3} \cdot \frac{1}{h} = \frac{-h}{(3+h) \cdot 3 \cdot h}$$

(Let h be very small.)

so slope = $\frac{-1}{(3+0) \cdot 3} = \frac{-1}{9}$.



$$\frac{f(2+h) - f(2)}{h} = \frac{\sqrt{2+h} - \sqrt{2}}{h}$$

$$= \frac{(\sqrt{2+h} - \sqrt{2})(\sqrt{2+h} + \sqrt{2})}{h(\sqrt{2+h} + \sqrt{2})}$$

$$= \frac{(2+h) - 2}{h(\sqrt{2+h} + \sqrt{2})} = \frac{h}{h(\sqrt{2+h} + \sqrt{2})}$$

(Let h be very small.)

so slope = $\frac{1}{\sqrt{2+0} + \sqrt{2}} = \frac{1}{2\sqrt{2}}$

2.) a.) $m = \frac{0 - (-\frac{1}{4})}{-1 - \frac{2}{3}} = \frac{\frac{1}{4}}{-\frac{5}{3}} = \frac{1}{4} \cdot \frac{-3}{5} = \frac{-3}{20} \rightarrow$

$y = mx + b \rightarrow 0 = \frac{-3}{20}(-1) + b \rightarrow b = \frac{-3}{20}$ so

$$y = \frac{-3}{20}x + \frac{-3}{20}$$