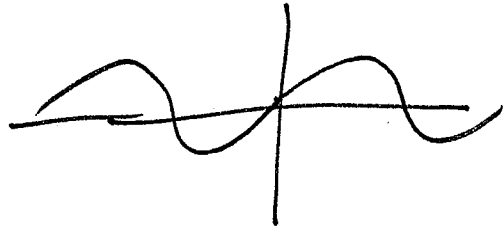


2.1

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$



$$27) \lim_{x \rightarrow 0} \frac{\sin^2 x}{x}$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} \cdot \sin x$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} \cdot \lim_{x \rightarrow 0} \sin x$$

$$1 \cdot 0 = 0$$

$$\frac{2}{3} \cdot \frac{2}{2} = \frac{4}{6}$$

$$\frac{2}{6} \cdot 2$$

$$24) \lim_{x \rightarrow 0} \frac{\sin 2x}{x} \cdot \frac{2}{2} \rightarrow \left( \frac{\sin 2x}{x} \cdot \frac{1}{2} \right) \cdot \frac{2}{1}$$

$$\lim_{x \rightarrow 0} \frac{\sin 2x}{2x} \cdot \frac{2}{1}$$

$$\lim_{x \rightarrow 0} \frac{\sin 2x}{2x} \cdot \lim_{x \rightarrow 0} 2$$

$$1 \cdot 2 = 2$$

$$25) \lim_{x \rightarrow 0} \frac{\sin x}{2x^2 - x}$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{x(2x-1)}$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} \cdot \frac{1}{2x-1}$$

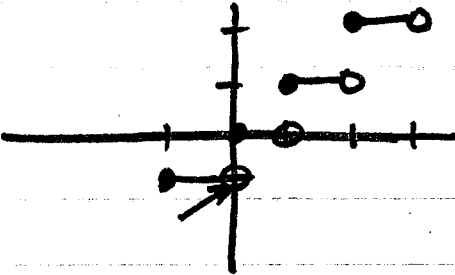
$$\lim_{x \rightarrow 0} \frac{\sin x}{x} \cdot \lim_{x \rightarrow 0} \frac{1}{2x-1}$$

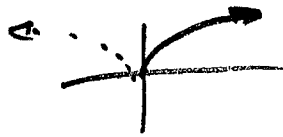
$$1 \cdot -1 = -1$$

2.1

$$\begin{aligned} 7) \lim_{x \rightarrow -\frac{1}{2}} 3x^2(2x-1) &= 3\left(-\frac{1}{2}\right)^2 \left(2 \cdot -\frac{1}{2} - 1\right) \\ &= 3\left(\frac{1}{4}\right)(-2) && 2 \frac{3}{4} \cdot \frac{-2}{1} \\ &= -\frac{3}{2} \end{aligned}$$

32)



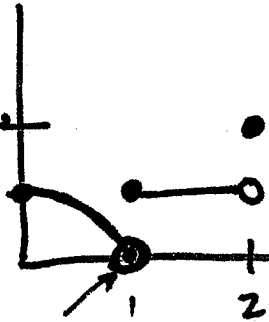


$$\sqrt{-x}$$

2.1

$$57) f(x) = \begin{cases} \sqrt{1-x^2}, & 0 \leq x < 1 \\ 1, & 1 \leq x < 2 \\ 2, & x = 2 \end{cases}$$

(a)



(b)  $(0, 1) \cup (1, 2)$

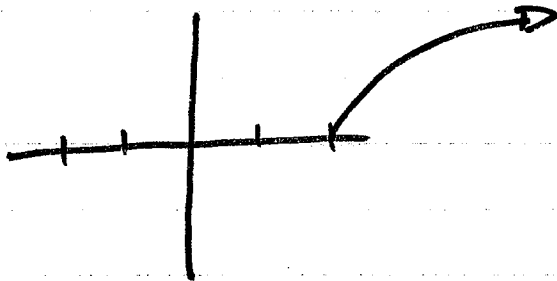
(c)  $x = 2$

open

(d)  $x = 0$

$$21) \lim_{x \rightarrow 0} \frac{5x^3 + 8x^2}{3x^2 - 16x^2} = \lim_{x \rightarrow 0} \frac{x^2(5x+8)}{x^2(3x^2-16)} = \lim_{x \rightarrow 0} \frac{5x+8}{3x^2-16} = \frac{8}{-16} = -\frac{1}{2}$$

$$15) \lim_{x \rightarrow 2} \sqrt{x-2}$$



$$32) \lim_{x \rightarrow 0^-} \text{int } x = \lim_{x \rightarrow 0^-} \lfloor x \rfloor = -1$$

