$\boxed{2.8.11}$

f) $\sqrt{(4x^2-2x)^3} = \left[(4x^2-2x)^3\right]^{\frac{1}{2}}$

$= (4x^2-2x)^{\frac{3}{2}}$

$$f'(x) = \left[(\boxed{4x^2-2x})^{\frac{3}{2}}\right]' = \frac{3}{2}(4x^2-2x)^{\frac{1}{2}} \cdot (4x^2-2x)'$$

$$= \frac{3}{2}(8x-2)\sqrt{4x^2-2x}$$

$$= (12x-3)\sqrt{4x^2-2x} = 3(4x-1)\sqrt{4x^2-2x}$$

$$\boxed{2.8.1 \quad d)} \qquad f(x) = \frac{1}{3x+1}$$

$$\frac{f(x+h) - f(x)}{h} = \frac{\left[\frac{1}{3(x+h)+1} - \frac{1}{3x+1}\right]}{h}$$

$$= \frac{1}{h} \cdot \left[ \frac{1 \cdot (3x+1) - \left(3(x+h)+1\right) \cdot 1}{\left(3(x+h)+1\right)(3x+1)} \right]$$

$$= \frac{1}{h} \cdot \frac{3x + \cancel{1} - 3(x+h) - \cancel{1}}{\left(3(x+h)+1\right)(3x+1)} = \frac{1}{h} \frac{\cancel{3x} - \cancel{3x} - 3h}{\left(3(x+h)+1\right)(3x+1)}$$

$$= \frac{1}{\cancel{h}} \cdot \frac{(-3) \cdot h}{\left(3(x+h)+1\right)(3x+1)} = -\frac{3}{\left(3(x+h)+1\right)(3x+1)}$$

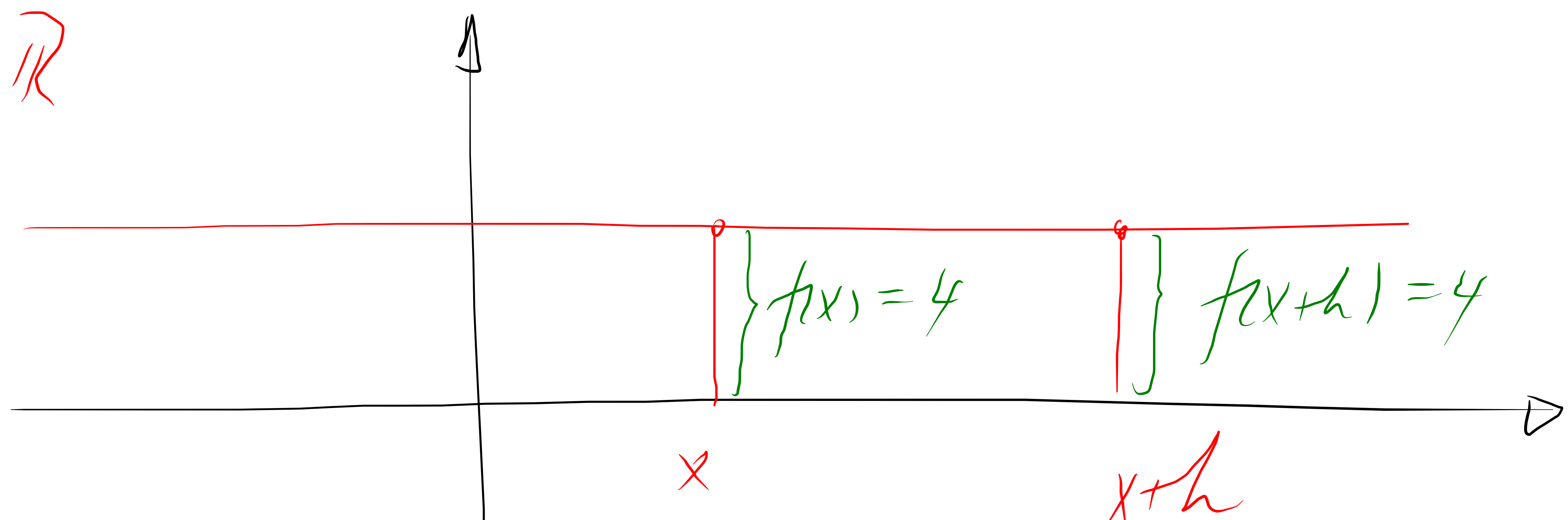
$$\Big\downarrow \; h \to 0$$

$$-\frac{3}{(3x+1)^2}$$

$$\frac{f(x+h)-f(x)}{h} \xrightarrow{h\to 0} f'(x)$$

$f(x) = 4 \quad \forall x \in \mathbb{R}$

$f(x+h) = 4$




$$\frac{f(x+h)-f(x)}{h} = \frac{4-4}{h} = \frac{0}{h} = 0 \xrightarrow{h\to 0} 0$$

$$\Rightarrow (4)' = 0$$

$$\left(\frac{\sin x + 1}{1-\sin x}\right)' = \frac{\overset{f'}{\cos x}\,(\overset{g}{1-\sin x}) - (\overset{f}{\sin x+1})(\overset{g'}{-\cos x})}{\underset{g^2}{(1-\sin x)^2}}$$

$\boxed{2.8.12}$

f)

$$= \frac{\cos x - \cancel{\sin x \cos x} - \cancel{\sin x \cos x} + \cos x}{(1-\sin x)^2}$$

$$= \frac{2\cos x}{(1-\sin x)^2}$$