(37) $\lim_{t \to 0} \dfrac{\sin^2 t}{t^3} = \dfrac{\sin t}{t} \cdot \dfrac{\sin t}{t} \cdot \dfrac{1}{t}$

$\downarrow \quad \downarrow \quad \downarrow$

$1 \quad 1 \quad \infty$

DNE

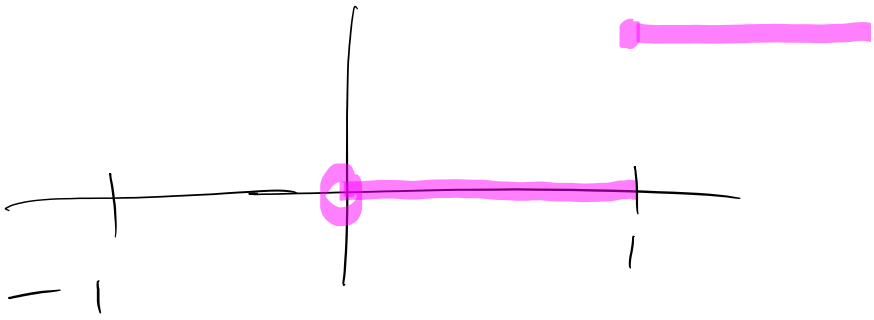
(31) $\lim_{t \to 0^+} \frac{[x]}{x} = 0$

$[2.1] = 2$

$[2.999] = 2$

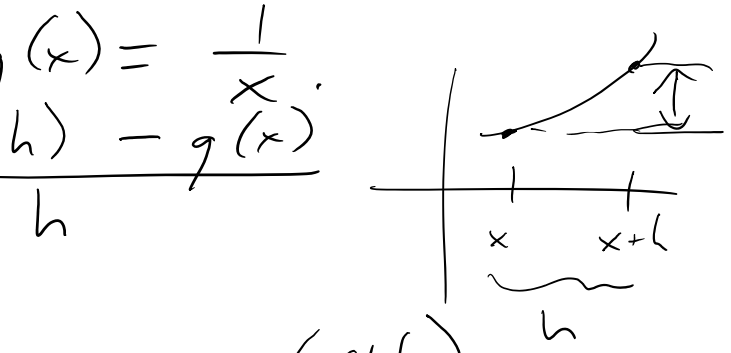
$[2] = 2$

[ ] greatest integer function



Use limit definition of derivative to find $g'(x)$ if $g(x) = \frac{1}{x}$.

$$g'(x) = \lim_{h \to 0} \frac{g(x+h) - g(x)}{h}$$

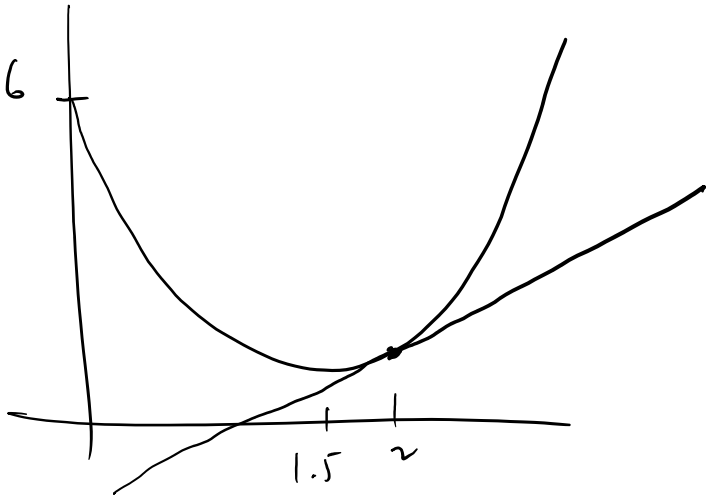


$$\lim_{h \to 0} \frac{\frac{x}{x} \cdot \frac{1}{x+h} - \frac{1}{x} \cdot \frac{x+h}{x+h}}{h} = \frac{x - (x+h)}{h \times (x+h)}$$

$$\frac{-h}{h \times (x+h)} = -\frac{1}{x(x+h)} \to -\frac{1}{x^2}$$

Wednesday, September 5, 2018 10:07 AM

(5) $\lim_{x \to 0} \dfrac{1 - \cos^3 x}{x^2}$



$f'(2)$