72) (part 2)

$\lim_{x \to c} f(x) = \infty$ $\lim_{x \to c} g(x) = L > 0$

Prove $\lim_{x \to c} f(x)g(x) = \infty$

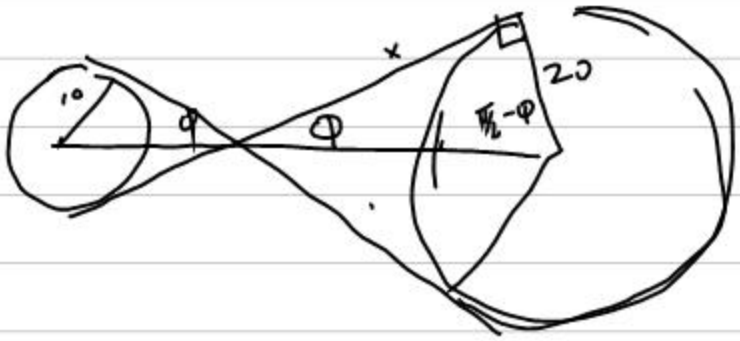
If $|x-c| < \delta$ then $f(x) > M$

for Any $M > 0$ such as $\frac{M}{L}$

If $|x-c| < \delta$ then $f(x) > \frac{M}{L}$

$L f(x) > M$

66)



$L(\theta) = 2(\pi)(20) - 20(\pi - 2\theta) + 2\pi(10) - 10(\pi - 2\theta) + 2(20)\cot\theta + 2(10)\cot\theta$

$L(\theta) = 30\pi + 60\theta + 60\cot\theta$

$0 < \theta < \pi/2$

Def. The derivative of $f(x)$ at $x = a$

$$f'(a) = \lim_{\Delta x \to 0} \frac{f(a+\Delta x) - f(a)}{\Delta x}$$

provided the limit exists

alternative definition

$$f'(a) = \lim_{x \to a} \frac{f(x) - f(a)}{x - a}$$

Derivative of a function

$$f'(x) = \lim_{\Delta x \to 0} \frac{f(x+\Delta x) - f(x)}{\Delta x}$$