

Limit Laws Examples

- $$\lim_{x \rightarrow \frac{\pi}{6}} (\sin x + \cos x) = \lim_{x \rightarrow \frac{\pi}{6}} \sin x + \lim_{x \rightarrow \frac{\pi}{6}} \cos x = \frac{1}{2} + \frac{\sqrt{3}}{2}$$
- $$\lim_{x \rightarrow 2} \left(\frac{1}{x} - x^2 \right) = \lim_{x \rightarrow 2} \frac{1}{x} - \lim_{x \rightarrow 2} x^2 = \frac{1}{2} - 4 = -3.5$$
- $$\lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{kh} = \frac{1}{k} \lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{h} = \frac{1}{k} \bullet (\text{slope of the tangent line at } x = a)$$
- $$\lim_{x \rightarrow 0} \frac{\tan x}{x} = \lim_{x \rightarrow 0} \frac{\sin x}{x} \bullet \lim_{x \rightarrow 0} \sec x = 1 \bullet 1 = 1$$
- $$\lim_{x \rightarrow 0} \frac{\tan x}{x} = \frac{\lim_{x \rightarrow 0} \frac{\sin x}{x}}{\lim_{x \rightarrow 0} \cos(x)} = \frac{1}{1} = 1$$
- $$\lim_{x \rightarrow 2} (x^2 - 5x + 1)^5 = \left(\lim_{x \rightarrow 2} (x^2 - 5x + 1) \right)^5 = (4 - 10 + 1)^5 = (-5)^5 = -3125$$
- $$\lim_{x \rightarrow a} \frac{p}{5s} = \frac{p}{5s}$$
- $$\lim_{x \rightarrow 7} x = 7$$
- $$\lim_{x \rightarrow 2} x^3 = 2^3 = 8$$
- $$\lim_{x \rightarrow 16} \sqrt[4]{x} = \sqrt[4]{16} = 2$$
- $$\lim_{x \rightarrow 0} \sqrt[4]{7 \cos x + (x-3)^2} = \sqrt[4]{\lim_{x \rightarrow 0} (7 \cos x + (x-3)^2)} = \sqrt[4]{7+9} = \sqrt[4]{16} = 2$$