

If you want to tutor students at CHS:

<https://tinyurl.com/CHSTutorMath>

Limits

$$\underline{\text{Ex.}} \quad \lim_{x \rightarrow 5} (x^2 - 2x + 2) = 5^2 - 2(5) + 2 = 17$$

$$\underline{\text{Ex.}} \quad \lim_{x \rightarrow -2} \frac{1}{3x} = \frac{1}{-6}$$

$$\underline{\text{Ex.}} \quad \lim_{x \rightarrow \infty} (4x^5 - 2x^2 + 2) = \infty$$

$$\underline{\text{Ex.}} \quad \lim_{x \rightarrow -\infty} (2x + 1 - x^3) = \infty$$

Ex. $\lim_{x \rightarrow \infty} \frac{5x + x^4 - 1}{4x^4 + x^2 - x} = \lim_{x \rightarrow \infty} \frac{x^4}{4x^4} = \lim_{x \rightarrow \infty} \frac{1}{4} = \frac{1}{4}$

Ex. $\lim_{x \rightarrow \infty} \frac{e^x - 2}{3e^x - 2x} = \lim_{x \rightarrow \infty} \frac{e^x}{3e^x} = \frac{1}{3}$

Ex. $\lim_{x \rightarrow \infty} \frac{3x^2 + 1}{4x^3 - x} = \lim_{x \rightarrow \infty} \frac{3x^2}{4x^3} = \lim_{x \rightarrow \infty} \frac{3}{4x} = 0$

$$\underline{\text{Ex.}} \quad \lim_{x \rightarrow 5} \frac{2x}{(x-5)^2} = \frac{\cancel{10}}{\cancel{0}} = \infty$$

$$\underline{\text{Ex.}} \quad \lim_{x \rightarrow 0} \frac{\sin x}{x} = \frac{\cancel{0}}{\cancel{0}} = 1$$

$$\underline{\text{Ex.}} \lim_{x \rightarrow 5} \frac{x^2 - 6x + 5}{x - 5} = \frac{0}{0}$$

$$= \lim_{x \rightarrow 5} \frac{(x-1)\cancel{(x-5)}}{\cancel{x-5}}$$

$$= \lim_{x \rightarrow 5} (x-1) = 4$$

$$y = \frac{x^2 - 6x + 5}{x - 5}, \quad x \neq 5$$
$$y = x - 1$$

