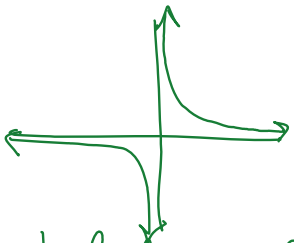
2.2 Infinite Limits

Sunday, August 14, 2016 8:51 PM

$\lim_{x\to\infty} \frac{1}{x} = 0$ $\lim_{x\to-\infty} \frac{1}{x} = 0$



Horizontal Asymptote

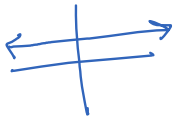
$\lim_{x\to\infty} f(x)$ and/or $\lim_{x\to-\infty} f(x)$

is a constant

End Behavior Models

① $f(x) = \frac{3x^3 + 2x - 1}{5x^3 - x + 10}$

EBM: $y = \frac{3x^3}{5x^3} = \frac{3}{5}$

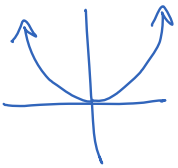


$\lim_{x\to\infty} f(x) = \frac{3}{5}$

$\lim_{x\to-\infty} f(x) = \frac{3}{5}$

② $f(x) = \frac{3x^4 + x - 1}{x^2 + 2}$

EBM $y = \frac{3x^4}{x^2} = 3x^2$

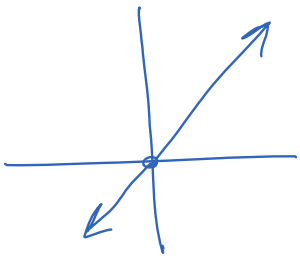


$\lim_{x\to\infty} f(x) = \infty$

$\lim_{x\to-\infty} f(x) = \infty$

③ $f(x) = \frac{3x^3 + x^2 + x}{x^2 + 10x + 5}$

EBM $y = \frac{3x^3}{x^2} = 3x$ (slant asymptote)



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

$\lim_{x\to-\infty} f(x) = -\infty$