Limits of Infinity

Below is a list of all the limits of Infinity, transformations and the remainder of work for week 3 that we went over in class.

Principles of dominance

1. $\lim_{x\to\infty} \frac{x^a}{x^b}$; then if x < b; the limit = 0

2. $\lim_{x\to\infty} \frac{Cx^a}{Dx^b}$; if b = x; then limit = $\frac{C}{D}$

3. $\lim_{x\to\infty} \frac{x^4}{x^5}$; if a > b; then limit = $\infty \; or \; -\infty$

   ☺ ***Tip***: The working of the numerators(top) and denominators(bottom). You should use the denominators highest order/power!

Example: $\frac{3x^2+2}{2x^2-9x^3+7}$; Utilize the $9x^3$; the x^3 should be divided throughout the equation.

The use of $\lim_{x\to 0} \frac{\sin(x)}{x} = 1$ and $\lim_{x\to 0} \frac{\cos(x)-1}{x} = 0$