Practice Assessment 3
Limits at Infinity

These **practice problems** are designed to help you **prepare for our course exams** and **assess your understanding** of the course material at the expected level. Aim to complete them **in class, during tutoring, office hours, or on your own**, and try to solve them **without notes or a calculator**, just like on the **actual exams**. Remember, **practice makes perfect**, so don't hesitate to **ask for help** if you get stuck.

1. Calculate each of the following limits by writing them as the ratio of their dominant terms.

   (a) $\lim_{x\to\infty} \dfrac{8-4x^2}{9x^2+5x} =$

   (b) $\lim_{t\to\infty} \dfrac{3t^7-4t^2-17}{2t^6+5t^3-13t+1} =$

   (c) $\lim_{u\to-\infty} \dfrac{17u^3-2u^2+6u-9}{u^2+164} =$

   (d) $\lim_{r\to-\infty} \dfrac{10r^5+16r^4-3r+2}{2r^3-16} =$

(e) $\lim_{z\to\infty} \dfrac{-3z^5+z^4-4z^3+z^2-5z+9}{2z^5-7z^4+z^3-8z^2+2z-8} =$

(f) $\lim_{s\to-\infty} \dfrac{16s^3-3s^2-7}{25s^3+17s+1} =$

(g) $\lim_{h\to\infty} \dfrac{\sqrt{3h^8+16h^5+2h}+h^2-17}{4h^4+60h^2-3} =$

(h) $\lim_{w\to-\infty} \dfrac{5w^2+9}{\sqrt[3]{8w^6-7w+24}-w+1} =$

(i) $\lim_{a\to\infty} \dfrac{\sqrt{a^6-3a^5+2}-a^4}{13a^3+a^2+1} =$