Practice Problems

1. Write a limit problem where plugging in gives you $0 \div 0$ but the limit equals 1.
**Anything like $\lim_{x \to 0} \frac{x}{x}$ will work.**

2. Write a limit problem where plugging in gives you $0 \div 0$ but the limit equals ∞.
**Anything like $\lim_{x \to 0} \frac{x}{x^2}$ will work.**

3. True or false: It is possible for $\infty / \infty$ to give you 0.
**True. For example, $\lim_{x \to \infty} \frac{x}{x^2}$**

4. Find $\lim_{x \to 0} \frac{x^3 + 7x^2 - 1/x}{4x^4 + 1/x^2}$ **The lowest power is $x^{-2}$ so divide by $x^{-2}$ which is the same as multiplying by $x^2$.**
**$\Rightarrow \frac{x^5 + 7x^5 - 1x}{4x^6 + 1}$ Now when we plug in 0 we get 0/1 = 0.**

5. Find $\lim_{x \to \infty} 4x^2 - x^3$ **If we were to plug in we would get ∞ - ∞, which is an indeterminate form. So let's factor. We get $x^2(4-x)$. Now plug in and you get ∞ (- ∞) which is clearly = - ∞**