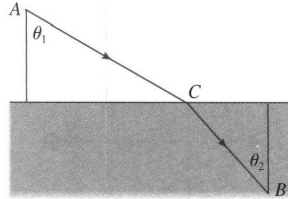


Calculus Quiz 8

1. (5 pts) Sketch the curve defined by the function $f(x) = \frac{x^3}{x^2 - 1}$.

2. (5 pts) Let v_1 be the velocity of light in air and v_2 the velocity of light in water. According to *Fermat's Principle*, a ray of light will travel from a point A in the air to a point B in the water by a path ACB that minimize the time taken.



Show that $\frac{\sin \theta_1}{\sin \theta_2} = \frac{v_1}{v_2}$ where θ_1 (the angle of incidence) and θ_2 (the angle of refraction) are as shown. This equation is known as *Snell's Law*.