31. \[ \frac{8 - x^3}{2x^2} = \frac{8}{2x^2} - \frac{x^3}{2x^2} = \frac{4}{x^2} - \frac{1}{2} x \]

The oblique asymptote is \( y = -\frac{1}{2} x \).

C4.1

9. \( f(x) = 1 - x^{\frac{2}{3}} \) \[ f'(x) = -\frac{2}{3} x^{-\frac{1}{3}} = \frac{-2}{3x^{\frac{1}{3}}} \]

\( f'(x) \) is never 0. It is undefined when \( x = 0 \). Since \( f \) is defined at 0, 0 is a critical number of \( f \), and \( 0 \in [-1, 8] \).

\( f(-1) = 1 - 1 = 0 \)

\( f(0) = 1 - 0 = 1 \) \text{ max}

\( f(8) = 1 - 4 = -3 \) \text{ min}

17. \( f(z) = (z^2 - 16)^{\frac{1}{2}} \)

\( f(z) \) is undefined when \(-4 < z < 4\), because then we have \( z^2 - 16 < 0 \).

\[ f'(z) = \frac{1}{2} (z^2 - 16)^{-\frac{1}{2}} (2z) = \frac{z}{\sqrt{z^2 - 16}} \]

\( f'(z) \) is undefined when \(-4 \leq z \leq 4\). Of these numbers, \( f \) is defined only at \( \pm 4 \).

In order for \( f'(z) \) to be 0, we must have \( z = 0 \). But \( f \) and \( f' \) are both undefined for \( z = 0 \). Thus the only critical numbers of \( f \) are \( \pm 4 \).