Section 4.8: cont'd

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1:09 PM

oblique (slant) asymptotes:

$f(x) = \frac{P(x)}{Q(x)}$ degree of $P(x)$: degree of $Q(x)$ + 1

(we won't look at "+2 or higher" cases)

does $g(x) = \frac{2x^2+3}{x+1}$ have an oblique asymptote?

yes!

$$\begin{array}{r} 2x - 2 \\ x+1 \overline{)\ 2x^2 + 0x + 3} \\ \underline{2x^2 + 2x} \\ -2x + 3 \\ \underline{-2x - 2} \\ 5 \end{array}$$

$g(x) =$ quotient $+ \frac{\text{remainder}}{\text{divisor}}$

$g(x) = \frac{2x^2+3}{x+1} = 2x - 2 + \frac{5}{x+1}$

↑ as $x \to \infty$, this term gets very small

$\therefore$ do long division

equation of asymptote $y =$ quotient

and don't worry about remainder

for this example $y = 2x - 2$