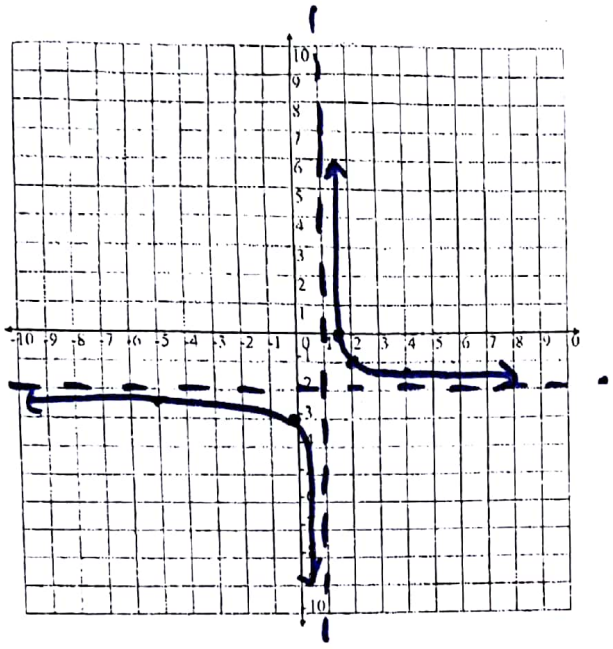
* For x-int set N = 0

4) Sketch the graph of $f(x) = \frac{3-2x}{x-1}$



Domain $(-\infty, 1) \cup (1, \infty)$

x-int $3 - 2x = 0$ $x = \frac{3}{2}$ $(1.5, 0)$

y-int $f(0) = \frac{3}{-1} = -3$ $(0, -3)$

V.A $x = 1$

H.A. deg of N = deg of D
$y = -2$

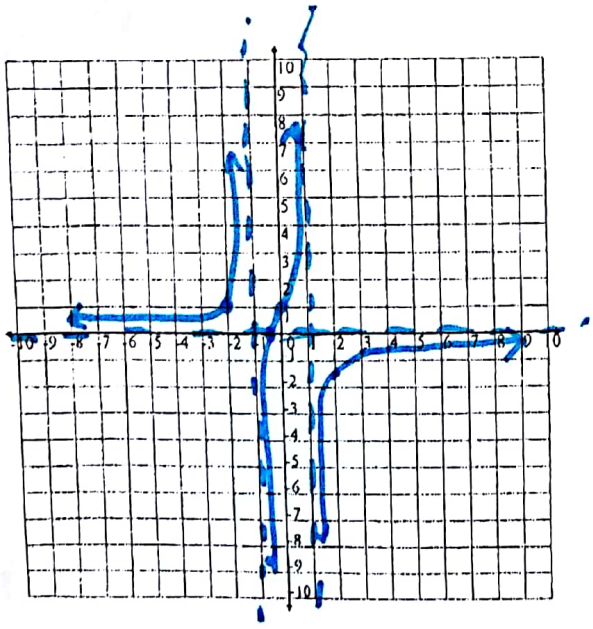
Limits:

$\lim_{x \to 1^-} f(x) = -\infty$ $\lim_{x \to -\infty} f(x) = -2$

$\lim_{x \to 1^+} f(x) = \infty$ $\lim_{x \to \infty} f(x) = -2$

V.A. HA ↓ -2

5) Sketch the graph of $f(x) = \frac{1+2x}{1-x^2}$



Domain $(-\infty, -1) \cup (-1, 1) \cup (1, \infty)$

x-int $1 + 2x = 0$ $x = -\frac{1}{2}$ $(-\frac{1}{2}, 0)$

y-int $f(0) = 1$ $(0, 1)$

V.A $x = -1$ $x = 1$

HA $y = 0$

$\lim_{x \to -\infty} f(x) = 0$

$\lim_{x \to \infty} f(x) = 0$

Limits: $\lim_{x \to -1^-} f(x) = \infty$ $\lim_{x \to 1^-} f(x) = \infty$

$\lim_{x \to -1^+} f(x) = -\infty$ $\lim_{x \to 1^+} f(x) = -\infty$

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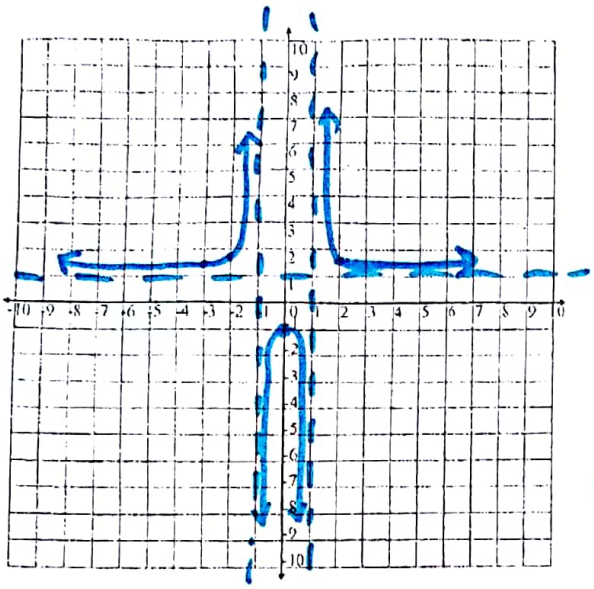
Sec 2.6 continued

6) Sketch the graph of $f(x) = \frac{2}{x^2 - 1} + 1$

↑ up 1 effects HA



Domain: $(-\infty, -1) \cup (-1, 1) \cup (1, \infty)$

x-int DNE

y-int $f(0) = -1$ $(0, -1)$

V.A. $x = -1$ $x = 1$

H.A. $y = 0 + 1$ $y = 1$

$\lim_{x \to -1^-} f(x) = \infty$ $\lim_{x \to 1^-} f(x) = -\infty$

$\lim_{x \to -1^+} f(x) = -\infty$ $\lim_{x \to 1^+} f(x) = \infty$

$\lim_{x \to -\infty} f(x) = 1$ $\lim_{x \to \infty} f(x) = 1$

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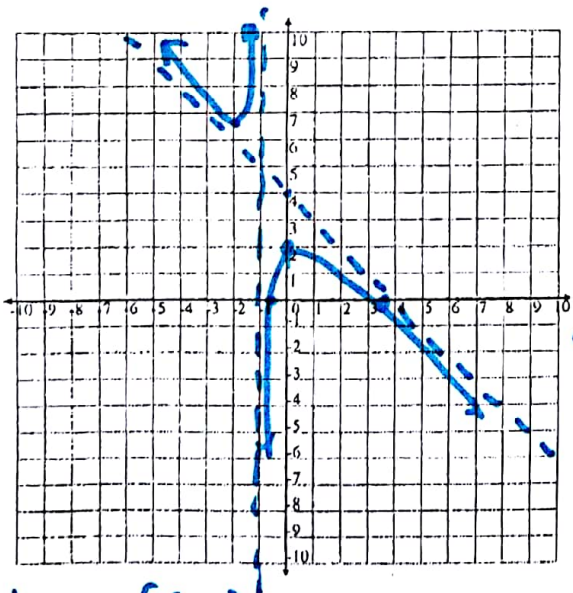
7) Sketch the graph of $f(x) = \frac{2 + 3x - x^2}{1 + x} = \frac{-x^2 + 3x + 2}{x + 1}$

x-int

$-x^2 + 3x + 2 = 0$

Q.F. $x = \frac{3 \pm \sqrt{17}}{2}$



Domain $(-\infty, -1) \cup (-1, \infty)$

x-int $(-0.56, 0)$ $(3.56, 0)$

y-int $(0, 2)$

V.A. $x = -1$

H.A. no HA (DNE)

SLANT ASYMPTOTE = when degree of N is exactly one more than degree of D.

$-1 \mid -1 \quad 3 \quad 2$

$\quad\quad\downarrow \quad 1 \quad -4$

$\quad\quad -1 \quad 4 \quad -2$

S.A. $y = -1x + 4$

$\lim_{x \to -1^-} f(x) = \infty$

$\lim_{x \to -1^+} f(x) = -\infty$

$\lim_{x \to -\infty} f(x) = \infty$

$\lim_{x \to \infty} f(x) = -\infty$

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