p.88

Is there a vertical asymptote or removable discontinuity at $x=-1$

(34) $f(x) = \frac{x^2-6x-7}{x+1}$

$= \frac{(x-7)(x+1)}{\cancel{x+1}}$

$= x-7$

Remov. Dis hole at $x=7$

$\lim_{x \to -1} f(x) = -8$

(Ex) $f(x) = \frac{x^2+x-2}{x+1}$

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

Non-Remov Disc. at $x=-1$, asymptote

(38) $\lim_{x \to 1^-} \frac{-1}{(x-1)^2}$

$\frac{-1}{(.9-1)^2}$

$\frac{-1}{.1^2} = -\infty$

(40) $\lim_{x \to 1^+} \frac{2+x}{1-x}$

$\frac{2+1}{1-1.1}$

$\frac{3}{-.1} = -\infty$

(42) $\lim_{x \to 4^-} \frac{x^2}{x^2+16}$

$\frac{4^2}{4^2+16}$

$\frac{1}{2}$

(46) $\lim_{x \to 3} \frac{x-2}{x^2}$

$\frac{3-2}{3^2}$

$\frac{1}{9}$

(48) $\lim_{x \to 0^-} \left(x^2 - \frac{1}{x}\right)$

$(-.1)^2 - \frac{1}{-.1}$

$.1^2 + \infty$

∞

(50) $\lim_{x \to \pi/2^+} \frac{-2}{\cos x}$

$\frac{-2}{-.1}$

∞

(52) $\lim_{x \to 0} \frac{x+2}{\cot x}$

$(x+2)\tan x$

$(0+2)\tan 0$

0

(54) $\lim_{x \to 1/2} x^2 \tan \pi x$

$(1/2)^2 \tan \frac{\pi}{2}$

limit DNE

(58) $\lim_{x \to 4^+} \sec \frac{\pi}{8} x$

$= \sec \frac{4\pi}{8}$

$= \sec \frac{\pi}{2}^+$

$-\infty$

(64) If $f(x) = \frac{p(x)}{x-1}$

Must there an asymptote at $x = 1$?

(68) $r = \frac{2x}{\sqrt{625 - x^2}}$ ft/sec

a) rate at $x = 7$ feet

$r = \frac{2(7)}{\sqrt{625 - 7^2}}$

$= \frac{7}{12}$ ft/sec

c) $\lim_{x \to 25^-} r$

$r = \frac{2(25)}{\sqrt{625 - 24.9^2}}$

$= \frac{50}{\sqrt{.1^2}} = \infty$