$$f(x) = \frac{3x^2 + 6x - 45}{1x^2 + 3x - 10}$$

(a) domain
(b) intercepts
(c) asymptotes + holes
(d) interval table

$$= \frac{3(x^2 + 2x - 15)}{x^2 + 3x - 10}$$

$$= \frac{3\cancel{(x+5)}(x-3)}{\cancel{(x+5)}(x-2)}$$

removed info.

$$= \frac{3(x-3)}{x-2}, \quad x \neq -5 \text{ (hole)}$$

$$f(-5) = \frac{3(-5-3)}{-5-2} = \frac{3(-8)}{-7} = \frac{24}{7}$$

hole @ $\left(-5, \frac{24}{7}\right)$

(a) $D_f = \{x \in \mathbb{R} \mid x \neq 2, x \neq -5\}$

(b) y-int, set $x = 0$

$$f(0) = \frac{3(0-3)}{0-2} = \frac{-9}{-2} = 4.5$$

x-int, set $f(x) = 0$

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

$$0 = 3(x-3), \quad x \neq 2$$

$$x = 3 \; *$$

y-int : $(0, 4.5)$

x-int : $(3, 0)$

* used $f(x) = \frac{3(x-3)}{x-2}$ for x-int, which works because if the hole was an x-intercept, we would have discovered it already.

(c) hole : $\left(-5, \frac{24}{7}\right)$

VA : $x = 2$ *

HA : $y = 3$

(d) interval table (use VAs, zeroes).

$x = 2$ $\qquad$ $x = 3$

$$f(x) = \frac{3(x-3)}{x-2}$$

	$(-\infty, 2)$	$(2, 3)$	$(3, \infty)$
	VA 2		zero 3
3	+	+	+
$x-3$	−	−	+
$x-2$	−	+	+
result.	+	−	+