

# Graphing Rationals

$$1.) f(x) = \frac{3x^2 - 12}{x^2 - 3x - 10} = \frac{3(x+2)(x-2)}{(x-5)(x+2)} = \frac{3(x-2)}{x-5}$$

y-intercept  $(0, \frac{4}{5})$  Domain  $x \neq 5, x \neq -2$

hole  $(-2, \frac{12}{7})$   $y = \frac{3(2-2)}{-2-5} = -\frac{12}{7}$

H.A:  $y = 3$

$(-\infty, -2) \cup (-2, 5) \cup (5, \infty)$

x-unt  $(2, 0)$

O.A: none

V.A:  $x = 5$

$$2.) f(x) = \frac{x+3}{2x^2+7x+3} = \frac{x+3}{(x+3)(2x+1)} = \frac{1}{2x+1}$$

y-inter:  $(0, 1)$  Domain:  $x \neq -3, x \neq -\frac{1}{2}$

hole  $(-3, -\frac{1}{5})$   $\frac{1}{2(-3)+1}$

HA:  $y = 0$

OA: none

$(-\infty, -3) \cup (-3, -\frac{1}{2}) \cup (-\frac{1}{2}, \infty)$

x-untap: none

V.A:  $x = -\frac{1}{2}$

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

y-unt: none

Domain

hole  $(\emptyset, \text{none})$   $\frac{0-2}{0}$

HA: none

$x \neq 0$

x-unt:  $(\sqrt{2}, 0) (-\sqrt{2}, 0)$

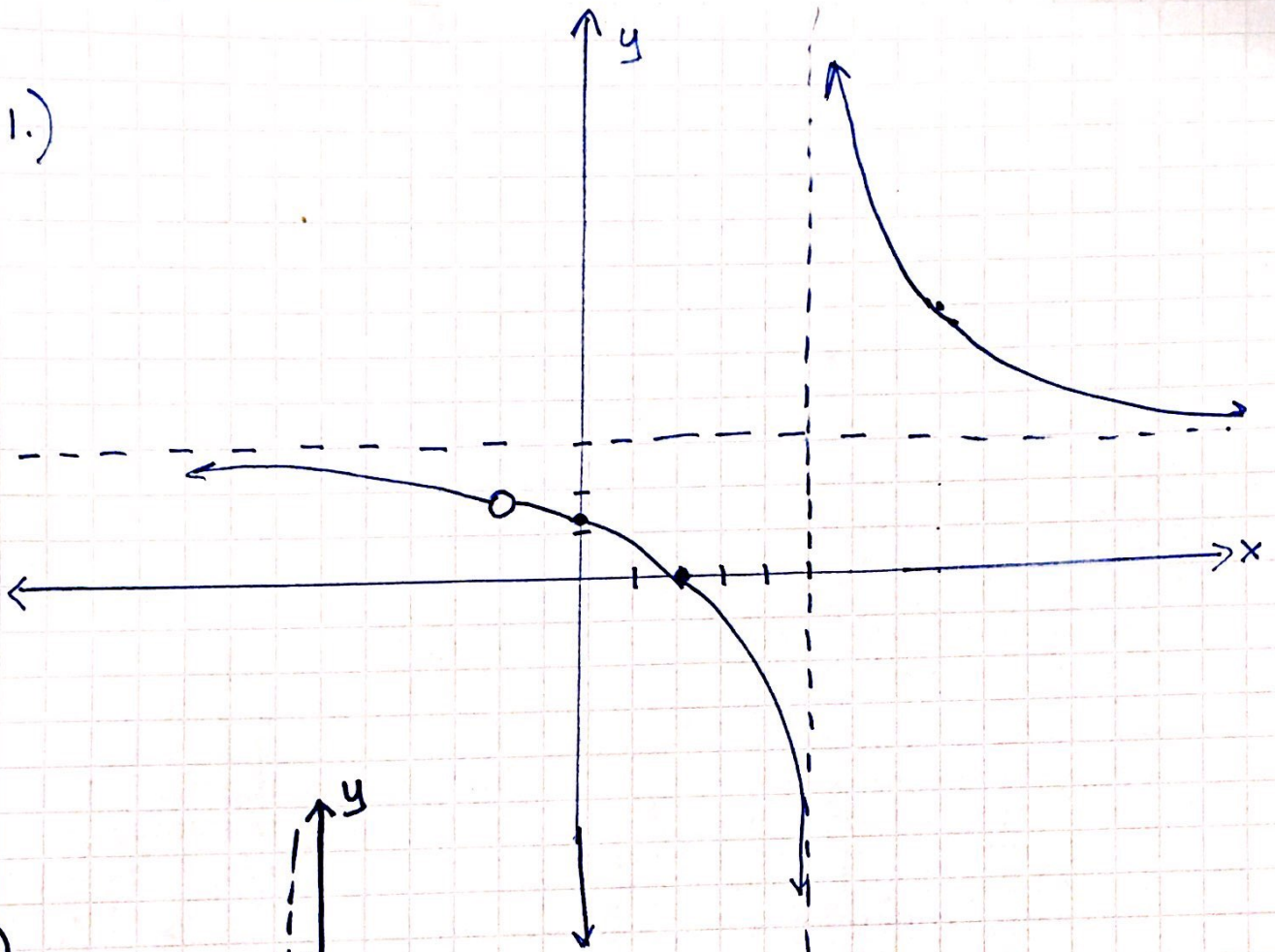
O.A:  $y = x$

$(-\infty, 0) \cup (0, \infty)$

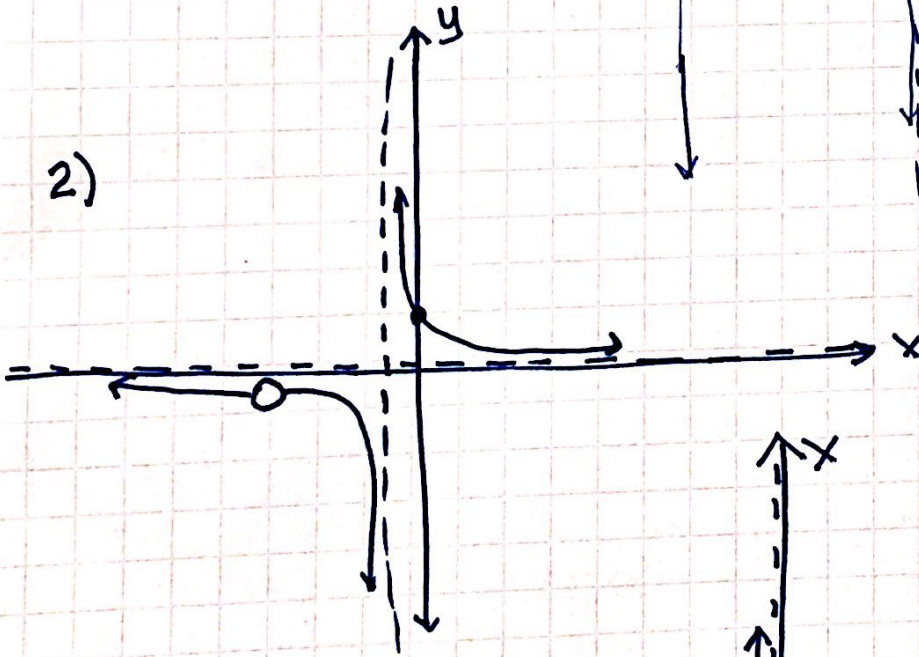
V.A:  $x = 0$

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

1.)



2.)



3.)

