

$$17) f(x) = \frac{3x^2 - 3x - 36}{x^2 + x - 2}$$

- Zero of the polynomial =
 $0 = 3x^2 - 3x - 36$

$$x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-3 \pm \sqrt{(-3)^2 - 4(3)(-36)}}{2(3)} = \frac{-3 \pm \sqrt{9 + 432}}{6}$$

$$x = \frac{-3 \pm \sqrt{441}}{6} = \frac{-3 \pm 21}{6} = \boxed{x = -4, x = 3}$$

- VERTICAL ASYMPTOTE

$$x^2 + x - 2 = 0 = (x+2)(x-1)$$

$$\boxed{x = -2, x = 1}$$

- Horizontal Asymptote

Since numerator & denominator has the same degree then
 horizontal asymptote = $\frac{3}{1} = 3$

$$- f(0) = \frac{3(0)^2 - 3(0) - 36}{0^2 + 0 - 2} = \frac{-36}{-2} = \boxed{18}$$

