3) $f(x) \equiv G(x)$

$x^3 - 3x^2 - x + 3 \equiv (a-b)x^3 + 3(a+b)x^2 - 5dx + c^2 - 1$

$x^3 + 3(-1)x^2 - 1x + 3 \equiv (a-b)x^3 + 3(a+b)x^2 - 5dx + c^2 - 1$

- constant: $c^2 - 1 = 3$

$c^2 = 4$

$\boxed{c = 2}$ or $\boxed{c = -2}$

- coefficient of x^3: $1 = a - b$
- coefficient of x^2: $-1 = a + b$

To find $a+b$ solve the system: $\begin{cases} a - b = 1 & \cdots ① \\ a + b = -1 & \cdots ② \end{cases}$ add

$2a = 0$

$\boxed{a = 0}$

Sub. value of a in 2 to get:

$a + b = -1$

$\boxed{b = -1}$

- coefficient of x: $-5d = -1$

$d = \frac{-1}{-5}$

$\boxed{d = \frac{1}{5}}$ ✓

4) a) $k(x)$ is a fractional expression since it has a variable in its lower part.

b) $k(x) = \frac{(x-1)(x+1)(x-3)}{(x+1)^2 - (2x-4)^2}$

$k(5) = \frac{(5-1)(5+1)(5-3)}{(5+1)^2 - (2(5)-4)^2} = \frac{4(6)(2)}{36-36} = \frac{48}{0}$