

2.1 1)

$$\alpha) \quad \boxed{(f \circ g)(x)} = f(g(x)) = g(x) + 3 = (2x - 6) + 3 = \boxed{2x - 3}$$

$$\beta) \quad \boxed{(g \circ f)(x)} = g(f(x)) = 2f(x) - 6 = 2(x + 3) - 6 = \boxed{2x}$$

$$\gamma) \quad \boxed{(f \circ f)(x)} = f(f(x)) = f(x) + 3 = (x + 3) + 3 = \boxed{x + 6}$$

2.1 2)

$$\alpha) \quad \boxed{(f \circ g)(x)} = f(g(x)) = 2g(x) + 1 = 2 \frac{x-1}{3x+2} + 1 = \frac{2x-2+3x+2}{3x+2} = \boxed{\frac{5x}{3x+2}}$$

$$\beta) \quad \boxed{(g \circ f)(x)} = g(f(x)) = \frac{f(x)-1}{3f(x)+2} = \frac{2x+1-1}{3(2x+1)+2} = \frac{2x}{6x+3+2} = \boxed{\frac{2x}{6x+5}}$$

$$\gamma) \quad \boxed{(g \circ g)(x)} = g(g(x)) = \frac{\frac{x-1}{3x+2} - 1}{3 \frac{x-1}{3x+2} + 2} = \frac{\frac{x-1-3x-2}{3x+2}}{\frac{3x-3+6x+4}{3x+2}} = \boxed{\frac{-2x-3}{9x+1}}$$

2.1 3)

$$\boxed{(f \circ g)(x)} = f(g(x)) = \frac{e^{\ln\left(\frac{x}{1+x}\right)}}{1 - e^{\ln\left(\frac{x}{1+x}\right)}} = \frac{\frac{x}{1+x}}{1 - \frac{x}{1+x}} = \frac{\frac{x}{1+x}}{\frac{1+x-x}{1+x}} = \boxed{x}$$