

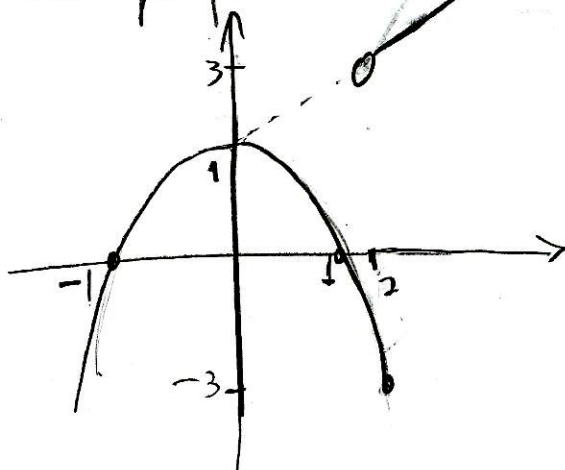
$$4. \quad f(x) = \begin{cases} 4x - 3, & x \geq 0 \\ x^2 - 3x + 2, & x < 0 \end{cases}$$

$$g(x) = \begin{cases} x + 1, & x > 2 \\ 1 - x^2, & x \leq 2 \end{cases}$$

Temos

$$(f \circ g)(x) = f(g(x)) = \begin{cases} 4g(x) - 3 & \text{se } g(x) \geq 0 \\ g^2(x) - 3g(x) + 2 & \text{se } g(x) < 0 \end{cases}$$

Mas, do gráfico de $g(x)$ nós vemos que



$$g(x) \geq 0 \quad \left\{ \begin{array}{l} \text{se } -1 \leq x \leq 1 \\ \text{ou } x > 2 \end{array} \right.$$

$$g(x) < 0 \quad \left\{ \begin{array}{l} \text{se } x < -1 \\ \text{ou } 1 < x \leq 2 \end{array} \right.$$

Daí

$$(f \circ g)(x) = \begin{cases} 4g(x) - 3 & \text{se } -1 \leq x \leq 1 \\ 4g(x) - 3 & \text{se } x > 2 \\ g^2(x) - 3g(x) + 2 & \text{se } x < -1 \\ g^2(x) - 3g(x) + 2 & \text{se } 1 < x \leq 2 \end{cases}$$