

No.: Exercise 1

Date.:

$$f(u) = u^2 - 5$$

$$\begin{aligned} 1. f(5) &= 5^2 - 5 \\ &= 25 - 5 \\ &= 20 \end{aligned}$$

$$\begin{aligned} 2. f(c+1) &= (c+1)^2 - 5 \\ &= c^2 + 2c + 1 - 5 \\ &= c^2 + 2c - 4 \end{aligned}$$

$$\begin{aligned} 3. f(k^3) &= (k^3)^2 - 5 \\ &= k^6 - 5 \end{aligned}$$

$$\begin{aligned} 4. f(u+h) &= (u+h)^2 - 5 \\ &= u^2 + 2uh + h^2 - 5 \end{aligned}$$

Exercise 2

$$1. f(u) = u^2 + 3$$

$$df : \{u \mid u \geq \sqrt{3}, u \in \mathbb{R}\}$$

$$u^2 + 3 \geq 0$$

$$u^2 \geq -3$$

$$u \geq \sqrt{3}$$

$$2. g(u) = 1/(u-2)$$

$$Df : \{u \mid u \neq 2, u \in \mathbb{R}\}$$

$$u-2 \neq 0$$

$$u \neq 2$$

(KIRY)

$$3. h(u) = \sqrt{1+5u}$$

$$\sqrt{1+5u} \geq 0$$

$$1+5u \geq 0$$

$$u \geq -1/5$$

$$Df : \{x \mid u \geq -1/5, u \in \mathbb{R}\}$$

Exercise 5

$$f(u) = u^2 + 1$$

$$g(u) = u + 1$$

$$\begin{aligned} 1. f \circ g(2) &= (u+1)^2 + 1 \\ &= u^2 + 2u + 1 + 1 \\ &= u^2 + 2u + 2 \\ &= 2^2 + 2 \cdot 2 + 2 \\ &= 10 \end{aligned}$$

$$2. f \circ g(u) = u^2 + 2u + 2$$

$$\begin{aligned} 3. f \circ g(a^2) &= u^2 + 2u + 2 \\ &= a^4 + 2a^2 + 2 \end{aligned}$$

$$\begin{aligned} 4. g \circ f(2) &= (u^2 + 1) + 1 \\ &= 4 + 1 + 1 \\ &= 6 \end{aligned}$$

$$\begin{aligned} 5. g \circ f(x) &= (x^2 + 1) + 1 \\ &= x^2 + 2 \end{aligned}$$

$$\begin{aligned} 6. g \circ f(\sqrt{a}) &= (x^2 + 1) + 1 \\ &= \sqrt{a}^2 + 2 \Rightarrow a + 2 \end{aligned}$$