

COMPOSITE FUNCTIONS REVIEW

Name _____

Per _____ Date _____

Use:

$$f(x) = x + 3$$

$$g(x) = \overset{\text{change } 2-4}{x^2 - 4}$$

$$h(x) = \sqrt{x}$$

$$k(x) = \frac{x}{x+3}$$

$$m(x) = \frac{6}{x}$$

FIND AND SIMPLIFY EACH: (SHOW WORK)

$$\textcircled{1} g(x) - f(x) = x^2 - 4 - (x + 3) = x^2 - 4 - x - 3 = x^2 - x - 7$$

$$\textcircled{2} f(x) \cdot g(x) = (x^2 - 4)(x + 3) = x^3 + 3x^2 - 4x - 12$$

$$\textcircled{3} g(f(x)) = x^2 - 4 + 3 = x^2 - 1 \text{ or } (x+1)(x-1)$$

$$\textcircled{4} h(g(x)) = \sqrt{x^2 - 4}$$

$$\textcircled{5} g(h(x)) = (\sqrt{x})^2 - 4 = x - 4$$

$$D_{h \circ g} = (-\infty, -2] \cup [2, \infty)$$

$$D_{g \circ h} = [0, \infty)$$

$$\textcircled{6} k(m(x)) = \frac{\frac{6}{x}}{\frac{6}{x} + 3} = \frac{\frac{6}{x}}{\frac{6 + 3x}{x}} = \frac{6}{6 + 3x}$$

$$\textcircled{7} m(k(x)) = \frac{6}{\frac{x}{x+3}} = \frac{6(x+3)}{x}$$

$$D_{k \circ m} = \frac{6}{x} \cdot \frac{x}{3(x+2)} = \frac{2}{x+2}$$

$$D_{m \circ k} = \{x \in \mathbb{R}, \text{ except } x \neq -3, 0\}$$

$$\{x \mid x \in \mathbb{R}, \text{ except } x \neq 0, 2\}$$