

Operations on Functions

$$f(x) = 2x$$

$$g(x) = -4x + 5$$

$$(f+g)(x) \quad (f-g)(x) \quad (f \cdot g)(x) \quad \left(\frac{f}{g}\right)(x)$$

$$(f+g)(x) = (2x) + (-4x+5) \\ = \boxed{-2x+5}$$

$$(f-g)(x) = (2x) - (-4x+5) \\ = \boxed{6x-5}$$

$$(f \cdot g)(x) = (2x)(-4x+5) \\ = \boxed{-8x^2+10x}$$

$$\left(\frac{f}{g}\right)(x) = \boxed{\frac{2x}{-4x+5} \mid x \neq \frac{5}{4}}$$
$$-4x+5=0$$
$$\underline{-5} \quad \underline{-5}$$
$$-4x = -5$$
$$\underline{-4} \quad \underline{-4}$$
$$x = \frac{5}{4}$$

$$f(x) = x^2$$

$$g(x) = -x+1$$

$$\left(\frac{f}{g}\right)(x) = \boxed{\frac{x^2}{-x+1} \mid x \neq 1}$$

$$-x+1=0$$

$$-x = -1$$

$$x = 1$$

$$f(x) = -x^2+6$$

$$g(x) = 2x^2+3x-5$$

$$\left(\frac{f}{g}\right)(x) = \boxed{\frac{-x^2+6}{2x^2+3x-5} \mid x \neq \frac{-5}{2}, 1}$$

$$2x^2+5x-2x-5$$

$$x(2x+5) - 1(2x+5)$$

$$(2x+5)(x-1)$$