

Domain: same as addition

Multiply: $(fg)(x) = f(x) \cdot g(x)$

$$= \frac{3x+4}{x^2-49} \cdot \frac{2x-3}{x^2-49}$$

$$= \frac{(3x+4)(2x-3)}{(x^2-49)(x^2-49)} = \frac{6x^2-9x+8x-12}{x^4-49x^2-49x^2+2401} = \frac{6x^2-x-12}{x^4-98x^2+2401}$$

Divide: $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$

Rewrite

$$= \frac{\frac{3x+4}{x^2-49}}{\frac{2x-3}{x^2-49}} = \frac{3x+4}{x^2-49} \cdot \frac{x^2-49}{2x-3}$$

$$= \frac{3x+4}{\cancel{x^2-49}} \cdot \frac{\cancel{x^2-49}}{2x-3}$$

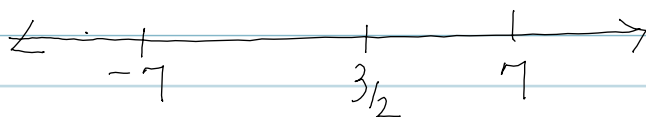
$$= \frac{3x+4}{2x-3}$$

$$2x-3=0$$

$$x = \frac{3}{2}$$

$\frac{3}{2}$ is excluded

$$x \neq -7 \text{ or } x \neq 7$$



Domain

$$(-\infty, -7) \cup (-7, \frac{3}{2}) \cup (\frac{3}{2}, 7) \cup (7, \infty)$$