Warm-up Problem (4.1-4.5) #2

Example $h(x) = e^{3x+2} (5x+3)^{12}$

Step 1 Product Rule 1st

$$f = e^{3x+2}$$
$$f' = 3e^{3x+2}$$

$$g = (5x+3)^{12}$$
$$g' = 12(5x+3)^{11} * 5$$
$$= 60(5x+3)^{11}$$

Formula: $f'g + g'f$ $= 3e^{3x+2}(5x+3)^{12} + 60(5x+3)^{11}(e^{3x+2})$

(with 20 written above)

Step 3 Take out common factors

$$3e^{3x+2}(5x+3)^{11} [(5x+3) + 20]$$

$$\boxed{3(5x+23)e^{3x+2}(5x+3)^{11}} (5x+23)$$

FINAL ANSWER