S. 201/10

a) $\int \frac{4}{x}\,dx = \underline{4\ln|x| + c}, \quad x \neq 0$

b) $\int \frac{3}{4x}\,dx = \underline{\frac{3}{4}\ln|x| + c}, \quad x \neq 0$

c) $\int 1 + \frac{2}{x}\,dx = \underline{x + 2\ln|x| + c}, \quad x \neq 0$

d) $\int 1 - \frac{5}{2x}\,dx = \underline{x - \frac{5}{2}\ln|x| + c}, \quad x \neq 0$

e) $\int \frac{1}{2x} + \frac{2}{2x^2}\,dx = \frac{1}{2}\int \frac{1}{x} + \frac{2}{x^2}\,dx = \underline{\frac{1}{2}\ln|x| - \frac{2}{x} + c}, \quad x \neq 0$

f) $\int -\frac{3}{5t} + \frac{3}{4t^2}\,dt = \underline{-\frac{3}{5}\ln|t| - \frac{3}{8t^2} + c}, \quad t \neq 0$

g) $\int \frac{1}{x-1}\,dx = \underline{\ln|x-1| + c}, \quad x \neq 1$

h) $\int \frac{1}{x+1} + \frac{1}{t+1}\,dt = \underline{\frac{1}{x+1} \cdot t + \ln|t+1| + c}, \quad t \neq -1$

S. 201/11

1) $F(x) = \frac{1}{2}\ln(x^2) = \ln x$

$\underline{F'(x) = \frac{1}{x}}$ nein

2) $F(x) = \ln(x^2) = 2\ln x$

$\underline{F'(x) = \frac{2}{x}}$ nein

3) $F(x) = \ln(x) \cdot (\ln(x) + x)$

$F'(x) = u' \cdot v + u \cdot v'$

$= \frac{1}{x} \cdot (\ln(x) + x) + \ln(x) \cdot (\frac{1}{x} + 1)$

$= \underline{\frac{1}{x}\ln(x) + 1 + \frac{1}{x}\ln(x) + \ln(x)}$ nein

4) $F(x) = x \cdot \ln(x) - x$

$F'(x) = 1 \cdot \ln(x) + x \cdot \frac{1}{x} - 1$

$\underline{F'(x) = \ln(x)}$ ja