10.9   1) $\displaystyle\int \frac{3}{2\,x}\,dx = \int \frac{3}{2}\cdot\frac{1}{x}\,dx = \tfrac{3}{2}\int\frac{1}{x}\,dx = \tfrac{3}{2}\ln\bigl(|x|\bigr)+c$

2) $\displaystyle\int \frac{1}{x}\,\ln\bigl(|x|\bigr)\,dx = \int \ln\bigl(|x|\bigr)\cdot\frac{1}{x}\,dx = \int \ln\bigl(|x|\bigr)\cdot\Bigl(\ln\bigl(|x|\bigr)\Bigr)'\,dx$

$$= \tfrac{1}{2}\ln^2\bigl(|x|\bigr)+c$$

3) $\displaystyle\int \frac{\ln^3\bigl(|x|\bigr)}{x}\,dx = \int \ln^3\bigl(|x|\bigr)\cdot\frac{1}{x}\,dx = \int \ln^3\bigl(|x|\bigr)\cdot\Bigl(\ln\bigl(|x|\bigr)\Bigr)'\,dx$

$$= \tfrac{1}{4}\ln^4\bigl(|x|\bigr)+c$$

4) $\displaystyle\int \frac{1}{x\,\ln^2\bigl(|x|\bigr)}\,dx = \int \frac{1}{\ln^2\bigl(|x|\bigr)}\cdot\frac{1}{x}\,dx = \int \Bigl(\ln\bigl(|x|\bigr)\Bigr)^{-2}\cdot\Bigl(\ln\bigl(|x|\bigr)\Bigr)'\,dx$

$$= \tfrac{1}{-1}\Bigl(\ln\bigl(|x|\bigr)\Bigr)^{-1}\,dx = -\frac{1}{\ln\bigl(|x|\bigr)}+c$$