Exponential and logarithmic derivative worksheet

Find the derivatives of the following functions.

1. $f(x) = \dfrac{e^{-x}}{x}$

2. $f(x) = \dfrac{1 + e^{2x}}{2 - e^{2x}}$

3. $f(x) = e^x \ln x$

4. $f(x) = \ln\left(\dfrac{x-1}{x^2+1}\right)$

5. $f(x) = e^{\sqrt{x^2+2}}$

6. $f(x) = x^4 + 4^x$

7. $f(x) = \ln\dfrac{1}{x} - \dfrac{1}{\ln x}$

8. $f(x) = x^2 e^{-x}$

9. $f(x) = \ln(3xe^{1-x})$

10. $f(x) = x^2 \ln(2x) + x \ln(3x) + 4 \ln x$