Find the derivative of each function.

1. $f(x) = x\ln(x) - x$

2. $f(x) = 3^{2x\cos(x)}$

3. $f(x) = \dfrac{x^{42} + 3\tan(x^2)}{e^{3x} - \sqrt{x}}$

4. $f(x) = \log_4\left(\cos(e^x)e^{5x^2}\right) + \cot(e)$

5. $f(x) = \dfrac{1}{\sqrt{x} + \tan(x)}$

6. $f(x) = (2x-5)\,(3x+2)^2$

7. $f(x) = \sec(\sqrt{x} + x^2)$

9. $f(x) = \dfrac{e^{\sin(x)}}{\cos(x)}$

9. $f(x) = \log_\pi(\ln(3x^\pi) + \pi x)$

10. $f(x) = \sin(e^{3x^2}\tan(x^2 + 2x))$