

Find the derivative of each function

$$1. \ f(x) = \ln(x^2 - x)$$

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

$$3. \ f(x) = \sin(\tan(x))$$

$$4. \ f(x) = e^{(x^2)}$$

$$5. \ f(x) = (e^x)^2$$

$$6. \ f(x) = e^{\sin(3x)}$$

$$7. \ f(x) = \left(\frac{x^2}{\ln(x)} \right)^3$$

$$8. \ f(x) = \sqrt{x^2 \cos(x)}$$

$$9. \ f(x) = \cos(\sin(x^5))$$

$$10. \ f(x) = \tan(e^x)$$

$$11. \ f(x) = \sec(x)$$

$$12. \ f(x) = \frac{\sec(x^2)}{e^x}$$