

Let  $f(x) = \ln(x)$ ,  $g(x) = x^2 + 3x$ , and  $h(x) = \cos(x)$ . Find the following derivatives.

**Remember:**  $(f \circ g)(x) = f(g(x))$

1.  $(f \circ g)'(x)$

2.  $(g \circ f)'(x)$

3.  $(h \circ g)'(x)$

Find the derivatives of the following functions.

1.  $(3x^2 + 2)^{14}$

2.  $\ln(\sin x)$

3.  $(\sin(3x^2))^2$

4.  $x^2 \sin(x^3)$

5.  $\sqrt{\ln(x^2 + 2x)}$