

# Derivatives of Complicated Functions

## Worksheet

Find the derivatives of the following functions.

1.  $f(x) = x^3 \sin(x) + x \ln(e^\pi)$

6.  $u(z) = z^2 \cos(z)e^z$

2.  $f(x) = (2^x + x)(x^2 + 1)$

7.  $k(u) = \tan^2(u) \ln(u)$

3.  $g(x) = \frac{\tan(x) - x}{e^x}$

8.  $g(y) = y \ln(y) + \frac{2^y}{y}$

4.  $w(x) = (\sin^2(x) - 1) \left(x^3 - \frac{1}{x}\right)$

9.  $f(x) = \frac{5e^{x+\ln(x^2)}}{x^2}$

5.  $h(x) = \frac{xe^x + x^2}{x^3 - 5x^2 + x}$

10.  $u(z) = \frac{z \cos(z)}{\sqrt{z}}$

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