

# Exponential Functions

1. Find the following derivatives.

(a)  $f(z) = 5^z$ .

(b)  $g(z) = z5^z$ .

(c)  $h(z) = \frac{5^z}{z}$ .

(d)  $f(z) = 3^z 5^z$ .

(e)  $g(z) = \sin 3^z$ .

2. Solve the following indefinite integral problems.

(a)  $\int 3^{2z} dz$

(b)  $\int z 4^{z^2} dz$

(c)  $\int (\cos z) \pi^{\sin z} dz$