

(10)  $w = \frac{z^2}{\sqrt{z+z}}$        $\frac{dw}{dz} \Big|_{z=9}$

$$\frac{dw}{dz} = \frac{(z^{1/2} + z)(2z) - z^2 \left(\frac{1}{2}z^{-1/2} + 1\right)}{(\sqrt{z+z})^2}$$

$$\frac{2z^{3/2} + 2z^2 - \frac{1}{2}z^{3/2} - z^2}{(\sqrt{z+z})^2}$$

$$\frac{1.5z^{3/2} + z^2}{(\sqrt{z+z})^2} = \frac{1.5(9)^{3/2} + 9^2}{(\sqrt{9+9})^2}$$

$$\frac{40.5 + 81}{144} = \frac{121.5}{144}$$

$$(11) \quad g(x) = \frac{1}{1+e^x}$$

$$g'(x) = \frac{(1+e^x) \cdot 0 - 1 \cdot e^x}{(1+e^x)^2}$$

$$(12) \quad f(x) = \frac{e^x}{x^2 + 1}$$

$$f'(x) = \frac{(x^2 + 1)e^x - e^x(2x)}{(x^2 + 1)^2}$$

$$= \frac{e^x(x^2 - 2x + 1)}{(x^2 + 1)^2}$$