Chapter 7 Review 1

1. Use the properties of logarithms to expand the quantity $\log_2\left(\frac{x^6 y}{z^5}\right)$

2. Find the inverse function of $y = \frac{2+e^x}{5-e^x}$

Find the derivative of each.

3. $y = 5\sin^{-1}(x^2)$ 4. $y = \frac{\ln x}{5+x}$ 5. $y = \frac{e^x - e^{-x}}{e^x + e^{-x}}$ 6. y = e^{x^2}

Integrate each.

7. $\int_e^{11} \frac{dx}{x \ln x}$ 8. $\int_0^2 \frac{e^x}{1+e^{2x}}\,dx$ 9. $\int \frac{x\,dx}{x^2+1}$ 10. $\int \tan(4x+2)dx$

11. Find $(f^{-1})'(a)$. $f(x) = \sqrt{x^3 + x^2 + x + 22},\ a = 5$

12. If $h(x) = x + \sqrt{x}$, find $h^{-1}(2)$.

13. If $f(x) = \frac{x}{\ln x}$, find $f'\left(e^2\right)$.

Answers

1. $6\log_2 x + \log_2 y - 5\log_2 z$ 2. $y = \ln\left(\frac{5x-2}{x+1}\right)$ 3. $\frac{10x}{\sqrt{1-x^4}}$ 4. $\frac{5+x-x\ln x}{x(5+x)^2}$

5. $y'(x) = \frac{4}{(e^x + e^{-x})^2}$ 6. $2x\,e^{x^2}$ 7. 0.875 8. $\arctan(e^2) - \frac{\pi}{4}$ 9. ½ $\ln(x^2 + 1) + C$

10. ¼ $\ln|\sec(4x + 2)| + C$ 11. $\frac{5}{3}$ 12. 1 13. ¼