

HW 57

$$1. y = \frac{8}{x-3}$$

$$x = \frac{8}{y-3}$$

$$x(y-3) = 8$$

$$y-3 = 8/x$$

$$y = \frac{8}{x} + 3$$

$$\boxed{g^{-1}(x) = \frac{8}{x} + 3}$$

$$2. y = \frac{3x-2}{4}$$

$$x = \frac{3y-2}{4}$$

$$4x = 3y-2$$

$$4x+2 = 3y$$

$$\boxed{\frac{4x+2}{3} = h^{-1}(x)}$$

$$3. y = \frac{7}{x} + 3$$

$$x = \frac{7}{y-3}$$

$$x-3 = \frac{7}{y}$$

$$y(x-3) = 7$$

$$\boxed{f^{-1}(x) = \frac{7}{x-3}}$$

$$4. g^{-1}(2) = \frac{8}{2} + 3$$

$$= 4 + 3$$

$$= 7$$

$$5. h^{-1}(-3) = \frac{4(-3)+2}{3}$$

$$= \frac{-12+2}{3}$$

$$= -10/3$$

$$6. f^{-1}(4) = \frac{7}{4-3}$$

$$= \frac{7}{1}$$

$$= 7$$

$$7. 3^{12} = x$$

$$8. \log_3 w = x$$

$$9. 10^1 = x$$

$$10. \log_{10} 8 = x$$

$$11. c^8 = 40$$

$$12. \log_b 123 = 9$$

$$13. 2^x = \frac{1}{64}$$

$$2^x = 2^{-6}$$

$$\boxed{x = -6}$$

$$14. 10^4 = x$$

$$\boxed{10,000 = x}$$

$$15. 16^{3/2} = x$$

$$(\sqrt{16})^3 = x$$

$$4^3 = x$$

$$\boxed{64 = x}$$

$$16. 81^x = 9$$

$$(9^{4/2})^x = 9^1$$

$$\boxed{x = 1/2}$$

$$17. (x^{1/2})^2 = (5)^2$$

$$\boxed{x = 25}$$

$$18. 7^x = 1$$

$$\boxed{x = 0}$$

$$19. (x^{-2})^{-1/2} = (100)^{-1/2}$$

$$\boxed{x = 1/10}$$

$$20. \log_6(4(x+5)) = 2$$

$$6^2 = 4x+20$$

$$36 = 4x+20$$

$$16 = 4x$$

$$\boxed{4 = x}$$

$$21. \log_2 \left(\frac{x+7}{5} \right) = 3$$

$$2^3 = \frac{x+7}{5}$$

$$8 = \frac{x+7}{5}$$

$$40 = x+7$$

$$\boxed{33 = x}$$

$$22. \log_4(3y^2)$$

$$23. \log \left(\frac{36}{64} \right)$$

$$= \log \left(\frac{9}{16} \right)$$

$$24. \log x \left(\frac{6^{1/3}}{16} \right)$$

$$25. \log 5 + 3 \log x$$

$$26. 4 \log_3 x - \log_3 5$$

$$27. \log 6 + \frac{1}{2} \log x$$

$$28. \log_{12} 162 = x+3$$

$$\frac{\log 162}{\log 12} - 3 = x$$

$$x \approx$$

$$29. \log_{52} 14 = x$$

$$\frac{\log 14}{\log 52} = x$$

$$x \approx$$

$$30. \log_2 21 = 3x$$

$$\frac{\log 21}{\log 2} = 3x$$

$$\frac{\log 21}{3 \log 2} = x$$

$$x \approx$$

$$31. \log_5 81 = 2x-1$$

$$\frac{\log 81}{\log 5} = 2x-1$$

$$\frac{\log 81}{\log 5} + 1 = 2x$$

$$\frac{\log 81}{2 \log 5} + \frac{1}{2} = x$$

$$x \approx$$

$$32. 7^{x-4} = 80$$

$$\log_7 80 = x-4$$

$$\frac{\log 80}{\log 7} + 4 = x$$

$$x \approx$$