10.5

1) $\log_9 81 = 2$
   $9^2 = 81$

3) $\log_7 \frac{1}{49} = -2$
   $7^{-2} = \frac{1}{49}$

5) $\log_{13} 169 = 2$
   $13^2 = 169$

7) $8^0 = 1$
   $\log_8 1 = 0$

9) $15^2 = 225$
   $\log_{15} 225 = 2$

11) $64^{\frac{1}{6}} = 2$
    $\log_{64} 2 = \frac{1}{6}$

13) $\log_{125} 5 = x$
    $125^x = 5$
    $(5^3)^x = 5^1$
    $5^{3x} = 5^1$
    $\frac{3x}{3} = \frac{1}{3}$
    $x = \frac{1}{3}$

15) $\log_{343} \frac{1}{7} = x$
    $343^x = \frac{1}{7}$
    $(7^3)^x = 7^{-1}$
    $7^{3x} = 7^{-1}$
    $\frac{3x}{3} = \frac{-1}{3}$
    $x = -\frac{1}{3}$

17) $\log_4 16 = x$
    $4^x = 16$
    $4^x = 4^2$
    $x = 2$

19) $\log_6 36 = x$
    $6^x = 36$
    $6^x = 6^2$
    $x = 2$

21) $\log_2 64 = x$
    $2^x = 64$
    $2^x = 2^6$
    $x = 6$

23) $\log_5 x = 1$
    $5^1 = x$
    $5 = x$

25) $\log_2 x = -2$
    $2^{-2} = x$
    $\frac{1}{2^2} = x$
    $\frac{1}{4} = x$

27) $\log_{11} k = 2$
    $11^2 = k$
    $121 = k$

29) $\log_9(n + 9) = 4$
    $9^4 = n + 9$
    $6561 = n + 9$
    $\underline{-9 \qquad -9}$
    $6552 = n$

31) $\log_5(-3m) = 3$
    $5^3 = -3m$
    $\frac{125}{-3} = \frac{-3m}{-3}$
    $-\frac{125}{3} = m$

33) $\log_{11}(x + 5) = -1$
    $11^{-1} = x + 5$
    $\frac{1}{11} = x + 5$
    $\underline{-5 \qquad -5}$
    $-\frac{54}{11} = x$

35) $\log_4(6b + 4) = 0$
    $4^0 = 6b + 4$
    $1 = 6b + 4$
    $\underline{-4 \qquad -4}$
    $\frac{-3}{6} = \frac{6b}{6}$
    $-\frac{1}{2} = b$

37) $\log_5(-10x + 4) = 4$
    $5^4 = -10x + 4$
    $625 = -10x + 4$
    $\underline{-4 \qquad\qquad -4}$
    $\frac{621}{-10} = \frac{-10x}{-10}$
    $-\frac{621}{10} = x$

39) $\log_2(10 - 5a) = 3$
    $2^3 = 10 - 5a$
    $8 = 10 - 5a$
    $\underline{-10 \quad -10}$
    $\frac{-2}{-5} = \frac{-5a}{-5}$
    $\frac{2}{5} = a$