Condense each expression to a single logarithm.

34) $5 \log_4 u$

$$= \boxed{\log_4 u^5}$$

35) $\log_6 a - \log_6 b$

$$= \boxed{\log_6 \left(\frac{a}{b}\right)}$$

36) $\log_3 a + \log_3 b$

$$= \boxed{\log_3 (ab)}$$

37) $4 \log_4 u + 4 \log_4 v$

$$= \log_4 u^4 + \log_4 v^4$$

$$= \boxed{\log_4 (u^4 v^4)}$$

or

$$= \log_4 (uv)^4$$

38) $\log_5 x - 5 \log_5 y$

$$= \log_5 x - \log_5 y^5$$

$$= \boxed{\log_5 \left(\frac{x}{y^5}\right)}$$

39) $5 \log_5 a + 5 \log_5 b$

$$= \log_5 a^5 + \log_5 b^5$$

$$= \boxed{\log_5 (a^5 b^5)}$$

or

$$= \boxed{\log_5 (ab)^5}$$

40) $3 \log_2 w + 3 \log_2 u + 12 \log_2 v$

$$= \log_2 w^3 + \log_2 u^3 + \log_2 v^{12}$$

$$= \boxed{\log_2 (w^3 u^3 v^{12})}$$

or

$$= \log_2 (wuv^4)^3$$

41) $4 \ln u + 8 \ln v + 4 \ln w$

$$= \ln u^4 + \ln v^8 + \ln w^4$$

$$= \boxed{\ln (u^4 v^8 w^4)}$$

or

$$= \ln (uv^2 w)^4$$

42) $3 \ln a - \ln c - 6 \ln b$

$$= \ln a^3 - \ln c - \ln b^6$$

$$= \boxed{\ln \left(\frac{a^3}{c b^6}\right)}$$

Solve each equation.

43) $-8 \cdot 10^p = -99$

$$10^p = 12.375$$
$$\text{LOG } 12.375 = P$$
$$\boxed{1.093 = P}$$

44) $3 \cdot 11^{p+1} = 41$

$$11^{p+1} = 13.\overline{6}$$
$$\text{LOG}_{11} 13.\overline{6} = P+1$$
$$\frac{\text{LOG } 13.\overline{6}}{\text{LOG } 11} = P+1$$
$$1.091 = P+1$$
$$\boxed{.091 = P}$$

45) $-8e^{8-8m} = -94.8$

$$e^{8-8m} = 11.85$$
$$\ln 11.85 = 8-8m$$
$$2.472 = 8-8m$$
$$\boxed{.691 = m}$$

46) $18^{v-4} = 2$

$$\text{LOG}_{18} 2 = v-4$$
$$\frac{\text{LOG } 2}{\text{LOG } 18} = v-4$$
$$.240 = v-4$$
$$\boxed{4.240 = v}$$

47) $16^{r+2} + 2 = 75$

$$16^{r+2} = 73$$
$$\text{LOG}_{16} 73 = r+2$$
$$\frac{\text{LOG } 73}{\text{LOG } 16} = r+2$$
$$1.547 = r+2$$
$$\boxed{-.453 = r}$$

48) $6 \cdot 10^{4k} - 10 = 61$

$$6 * 10^{4k} = 71$$
$$10^{4k} = 11.8\overline{3}$$
$$\text{LOG } 11.8\overline{3} = 4k$$
$$1.073 = 4k$$
$$\boxed{.268 = k}$$

49) $10\log_9 x = 30$

$$\text{LOG}_9 x = 3$$
$$9^3 = x$$
$$\boxed{729 = x}$$

50) $-3 + \ln(x+2) = 0$

$$\ln(x+2) = 3$$
$$e^3 = x+2$$
$$20.086 = x+2$$
$$\boxed{18.086 = x}$$

51) $10 + \log_6(-7k-7) = 14$

$$\text{LOG}_6(-7k-7) = 4$$
$$6^4 = -7k-7$$
$$1296 = -7k-7$$
$$\boxed{-186.143 = k}$$

52) $\log_5(a-3) = 2$

$$5^2 = a-3$$
$$25 = a-3$$
$$\boxed{28 = a}$$

53) $-7 \ln 2v = -28$

$\ln 2v = 4$

↓

$e^4 = 2v$

$54.598 = 2v$

$\boxed{27.299 = v}$

54) $5 \log_7 4v - 3 = -13$

$5 \log_7 4v = -10$

$\log_7 4v = -2$

↓

$7^{-2} = 4v$

$.020 = 4v$

$\boxed{.005 = v}$

55) $\log (4x + 3) = \log 5x$

$4x + 3 = 5x$

$\boxed{3 = x}$

56) $\ln x + \ln 6 = 3$

$\ln (6x) = 3$

↓

$e^3 = 6x$

$20.086 = 6x$

$\boxed{3.348 = x}$

57) $\ln (x + 5) - \ln x = 2$

$\ln \left(\frac{x+5}{x}\right) = 2$

$e^2 = \frac{x+5}{x}$

$7.389 = \frac{x+5}{x}$

$7.389x = x + 5$

$6.389x = 5$

$\boxed{x = .783}$

58) $\log_6 (x + 2) + \log_6 10 = 2$

$\log_6 \left[10(x+2)\right] = 2$

$\log_6 (10x + 20) = 2$

↓

$6^2 = 10x + 20$

$36 = 10x + 20$

$16 = 10x$

$\boxed{1.6 = x}$

59) $\ln 6 + \ln (3x - 3) = 4$

$\ln \left[6(3x-3)\right] = 4$

$\ln (18x - 18) = 4$

↓

$e^4 = 18x - 18$

$54.598 = 18x - 18$

$\boxed{4.033 = x}$

60) $\ln 9 - \ln (3 - 4x) = 5$

$\ln \left(\frac{9}{3-4x}\right) = 5$

↓

$e^5 = \frac{9}{3-4x}$

$148.413 = \frac{9}{3-4x}$

$148.413(3 - 4x) = 9$

$445.239 - 593.652x = 9$

$\boxed{x = .735}$