① $x^{-2/3} = \frac{1}{25}$

$\left(x^{-2/3}\right)^{-3/2} = \left(\frac{1}{25}\right)^{-3/2}$

$x = 25^{3/2}$

$x = \left(\sqrt{25}\right)^3$

③ $\ln(2x+5)(x+2) = \ln(4x+13)$

$2x^2+9x+10 = 4x+13$

$2x^2+5x-3=0$

$(2x-1)(x+3)=0$

$\boxed{x = 1/2}$

⑤ $\left(2^{-2}\right)^{1-4x} = \left(2^5\right)^{x-1}$

$-2+8x = 5x-5$

$3x = -3$

$x = -1$

⑦ $e^{3x+5} = 7$

$\ln e^{3x+5} = \ln 7$

$3x+5 = \ln 7$

$x = \frac{\ln 7 - 5}{3}$

⑨ $\log_e(x+2) = 5$

$e^5 = x+2$

$e^5 - 2 = x$

⑪ $\log_4 2^4 - \log_{27} 3$

$\left(4^x = 16,\ x=2\right)$ $\log_4 16 - \log_{27} 3$ $\left(27^y = 3,\ 3^{3y} = 3^1,\ y = 1/3\right)$

$2 - 1/3$

$1\frac{2}{3}$

⑬ $3^{\log_3 6x} = 6x$

⑮ $\ln 18 - \ln\sqrt{36}$

$= \ln \frac{18}{6}$

$= \ln 3$

⑰ $\ln 4^3 + \ln e^6$ $\left\{\log_e x = 6,\ x = e^6\right.$

$\ln 64e^6$

⑲ $\log_a \sqrt[3]{\frac{2}{9}} = \log_a \left(\frac{2}{9}\right)^{1/3}$

$= \frac{1}{3}\left(\log_a 2 - \log_a 9\right)$

$= \frac{1}{3}\log_a 2 - \frac{1}{3}\log_a 3^2$

$\frac{1}{3}x - 2/3\,y = \frac{1}{3}\log_a 2 - \frac{2}{3}\log_a 3$

21. $\sqrt[4]{625e^{12}}$

$= 5e^{12/4}$

$= 5e^{3}$

23. $y = ax^b$

$28 = a \cdot 2^b \rightarrow a = \frac{28}{2^b}$

$192 = a \cdot 8^b$

$192 = \frac{28}{2^b} \cdot 8^b$

$\frac{48}{7} = 4^b$

$\log\left(\frac{48}{7}\right) = b \log 4$

$\frac{\log(48/7)}{\log 4} = b \approx 1.389$

$a = \frac{28}{2^{1.389}} \approx 10.691$

25. a) $P = 50e^{-45/250}$

$P = 50e^{-.18}$

$P \approx 42$

b) $15 = 50e^{-t/250}$

$.3 = e^{-t/250}$

$\ln .3 = \underbrace{\ln e^{-t/250}}$

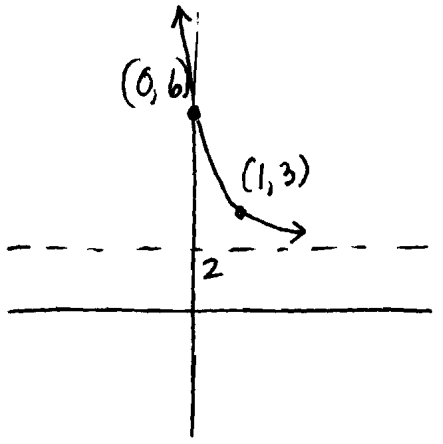
$\ln .3 = -t/250$

$(-\ln .3)250 = t \approx 301$

27. $y = \left(\frac{1}{4}\right)^{x-1} + 2$

D: all reals

R: $y > 2$



29. $y = \log_3 x - 4$

$3^{y+4} = x$

D: $x > 0$

R: all reals