1.

| | |
|---|---|
| 1 | $\frac{x+8}{2}$ |
| 2 | $-3<x<\frac{21}{5}$ |
| 3 | $\sqrt{82}$ |
| 4 | 2 |
| 5 | $y=\frac{x}{3}+1$ |
| 6 | $-4<x<4$ |
| 7 | $x=\ln(3)-5$ |
| 8 | $\frac{-1}{2}$ |

2. $\log_{18}(x-1)+\log_{18}(x+2)=1$

$\log_{18}(x-1)(x+2)=1$

$(x-1)(x+2)=18^1$

$x^2+x-2=18$

$x^2+x-2-18=0$

$x^2+x-20=0$

$(x+5)(x-4)=0$

$\log_{18}(-5-1)+\log_{18}(-5+2)$

$=$ DNE $\therefore -5$ not a solution

$\log_{18}(4-1)+\log_{18}(4+2)=1$

$\therefore x=4$ = solution

$x=5$ $\quad$ $x=4$ $\quad$ $\therefore x=4$

3. $N(t) = N_0 e^{kt}$

$N(2) = 500e^{2k}$

$1500 = 500e^{2k}$

$3 = e^{2k}$

$\ln(3) = \ln(e^{2k})$

$\ln(3) = 2k$

$\frac{\ln(3)}{2} = k$ ∴ growth constant is $\frac{\ln(3)}{2}$

4. $f(x) = \frac{x^3 - 5}{8}$

$y = \frac{x^3 - 5}{8}$

$x = \frac{y^3 - 5}{8}$

$8x = y^3 - 5$

$8x + 5 = y^3$

$\sqrt[3]{8x+5} = y$ ∴ $f^{-1}(x) = \sqrt[3]{8x+5}$