Math 120/121 – Exponential and Logarithmic Equations

Solve the following equations:

1. $8^t = -6$
   no solution

6. $12 = \log(4t)$
   $t = 2.5 \times 10^{11}$

2. $17 = 3^x$
   $x = 2.579$ or $\dfrac{\log 17}{\log 3}$

7. $-1 = \log(x + 3)$
   $x = -2.9$

8. $\log(x + 3) = \dfrac{1}{2}$
   $x = 0.16$

3. $4 = 15 - e^{x-8}$
   $x = 10.4$

9. $1 = \log_4 2 + \log_4 (3 + x)$
   $x = -1$

4. $29 + 10^{t+12} = 74$
   $t = -10.347$

10. $\log(t + 3) + \log(t) = 1$
   $t = 2$

5. $\ln(x - 1) = 3$
   $x = 21.09$

11. $\log_2(t+1)+\log_2(t-1)=5$

$t=+\sqrt{33}$

15. $\log_3(4t)=1-\log_3(3t)$

$t=\dfrac{1}{2}$

12. $-2=\log(2)-\log(3+x)$

$x=197$

16. $\log_2(-x)=3-\log_2(2-x)$

$x=-2$

13. $\ln(4t)-\ln(3t)=2$

no solution

17. $e^{2x}-e^x-6=0$

$x=1.1$

14. $\log_2(t+1)-\log_2(t-1)=3$

$t=\dfrac{9}{7}$

18. $e^x+29=12e^{\frac{x}{2}}$

$x=4.314$ or $x=2.42$