

$$1. x = \frac{\ln 10}{\ln 6 + \ln 10}$$

$$2. x = \ln 4$$

$$3. x = 2, x = 4$$

Challenge: $x = \frac{\ln 3}{\ln 2}$

$$4. x = \frac{\ln 15 + 4 \ln 2}{3 \ln 2} \quad (\text{or } x = \frac{4 + \log_2 15}{3})$$

$$5. x = \frac{4 \ln 5 - \ln 7}{\ln 5 + 3 \ln 7}$$

$$6. x = \frac{e^3 + \sqrt{e^6 + 4e^3}}{2}$$

$$7. x = \frac{10}{7}$$

8. No solution

$$9. x = 3 + \sqrt{10}$$

$$10. x = -1$$

$$11. x = 5$$

$$12. x = -1, 0, 1$$

$$13. x = -\frac{1}{2}, -\frac{5}{2}$$

$$14. x = 1$$

$$15. x = \frac{1}{3}$$

$$16. x = \frac{\ln 5}{\ln 2} \quad (\text{or } \log_2 5)$$

$$17. x = \ln \frac{1}{2}$$