

5.4 A

Date _____

Hour _____

Solve the exponential equations.

1. $10^x = 350$

$$x = \log 350 \approx 2.544$$

2. $e^x + 3 = 8$

$$x = \ln 5 \approx 1.609$$

3. $e^{3x} + 6 = 10$

$$x = \frac{\ln 4}{3} \approx 0.462$$

4. $2e^{4x} = 5$

$$x = \frac{\ln \frac{5}{2}}{4} \approx 0.229$$

5. $4^{-2x} - 3 = 1$

$$x = -\frac{1}{2}$$

6. $\frac{3}{8}(2^{3x}) + 1 = 10$

$$x = \frac{\log_2 24}{3} \approx 1.5$$

7. $4^{2x+3} = 1$

$$x = -\frac{3}{2}$$

8. $5^{3-2x} = 5^{-x}$

$$x = 3$$

9. $3^{2x} = 3^{-x}$

$$x = 0$$

10. $4^{2x} = 4^{-2x-1}$

$$x = -\frac{1}{4}$$

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11. $2^{2x+2} = 2^{3x}$

$$x = 2$$

12. $\frac{2^x}{2^x} = 2^{3x}$

$$x = 0$$

13. $3^{-2x+1} \cdot 3^{-2x-3} = 3^{-x}$

$$x = -\frac{2}{3}$$

14. $6^{-2x} \cdot 6^{-x} = \frac{1}{216}$

$$x = 1$$

15. $\frac{81^{3x+2}}{243^{-x}} = 3^4$

$$x = -\frac{4}{17}$$

16. $9^{-3x} \cdot 9^x = 27$

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

17. $243^{x+2} \cdot 9^{2x-1} = 9$

$$x = -\frac{2}{3}$$

18. $16^{2x-3} \cdot 4^{-2x} = 2^4$

$$x = 4$$