Unit X – Exponential and Logarithmic Functions
Part D – Solving Open Sentences
Lesson 1 – Exponential Equations

Solve each of the following exponential equations by making the bases the same, or imposing a base of 10, and taking the logarithm of both sides to that base. When necessary, approximate your answer to the nearest hundredth.

1. $5^{4x-7} = 125$

2. $4^{3x} = 64$

3. $2^{7x} = 64$

4. $7^{x} = 20$

5. $4^{x} = 8$

6. $2^{2x} = 32$

7. $2^{x} = 20$

8. $3^{2x} = 9$

9. $3^{x^{2}} \cdot 3^{4x} = \dfrac{1}{27}$

10. $3^{5x} = 27$

11. $2^{x} = 43$

12. $(3.6)^{x} = 62$

13. $4^{2x-3} = 64$

14. $2^{3x-5} = 16$

15. $3^{5x} \cdot 9^{x^{2}} = 27$

16. $27^{x} = 81^{2x-3}$

17. $5^{7x} = 625$

18. $3^{x} = 81$

19. $2^{x} = 55$

20. $4^{3x+5} = 16$

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Solve each of the following exponential equations by making the bases the same, or imposing a base of 10, and taking the logarithm of both sides to that base. When necessary, approximate your answer to the nearest hundredth.

1. $x = \dfrac{5}{2}$

2. $x = 1$

3. $x = \dfrac{6}{7}$

4. $x = 1.539462785$

5. $x = \dfrac{3}{2}$

6. $x = \dfrac{5}{2}$

7. $x = 4.322259136$

8. $x = 1$

9. $x = {}^-1$ or $x = {}^-3$

10. $x = \dfrac{3}{5}$

11. $x = 5.426910299$

12. $x = 3.222002517$

13. $x = 3$

14. $x = 3$

15. $x = \dfrac{1}{2}$ and $x = {}^-3$

16. $x = \dfrac{12}{5}$

17. $x = \dfrac{4}{7}$

18. $x = 4$

19. $x = 5.782059801$

20. $x = {}^-1$