

Solving Exponential Equations Math 3

| x | x^2 | x^3 | x^4 | x^5 |
|-----|-------|-------|----------------------|----------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | XXXXXXXXXXXXXXXXXXXX |
| 5 | | | | XXXXXXXXXXXXXXXXXXXX |
| 6 | | | XXXXXXXXXXXXXXXXXXXX | XXXXXXXXXXXXXXXXXXXX |
| 7 | | | XXXXXXXXXXXXXXXXXXXX | XXXXXXXXXXXXXXXXXXXX |
| 8 | | | XXXXXXXXXXXXXXXXXXXX | XXXXXXXXXXXXXXXXXXXX |
| 9 | | | XXXXXXXXXXXXXXXXXXXX | XXXXXXXXXXXXXXXXXXXX |
| 10 | | | XXXXXXXXXXXXXXXXXXXX | XXXXXXXXXXXXXXXXXXXX |

Solving Exponential Equations (by making the bases the same)

Examples

1. $2^{x+2} = 32$

2. $\left(\frac{1}{3}\right)^x = 9$

3. $3^{-x^2} = 3^{5x+6}$

4. $4^4 = 32^{2x}$

Practice Problems

1. $4^{x-3} = 64$

2. $\left(\frac{1}{5}\right)^x = \frac{1}{125}$

3. $4^{x^2} = 4^{-7x-12}$

4. $8^x = 16^{x+2}$

Solving Logarithmic and Exponential Equations (when bases cannot be made equal)

1. Logarithmic and Exponentials Functions are _____.
2. Solve log equations (undo the log) by _____.
3. Solve exponential equations (undo the exponent) by _____.

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Examples

5. $3^x = 72$

6. $3(2^x) = 42$

7. $4(2)^{2x} - 3 = 2$

8. $2(3^{2t-5}) - 4 = 11$

Practice Problems

5. $2^x = 13$

6. $4(3^x) = 64$

7. $5 - 3(3)^x = 2$

8. $6(2^{t+5}) + 4 = 11$

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Class Work

Solve for x.

1. $4^{2x-7} = 64$

2. $2^{3x+1} = 32$

3. $3(2)^{x+2} = 75$

4. $4(5)^{x-1} = 60$

5. $\left(\frac{1}{8}\right)^x = 64$

6. $\left(\frac{2}{3}\right)^x = \frac{81}{16}$

7. $5^{-t/2} = 0.2$

8. $7 - 2(4)^x = 5$

9. $5(2^{3-x}) - 13 = 100$

10. $5^x = 5^{x^2-2}$

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

12. Find the domain.

a) $y = \log_2 x$

b) $y = \log_3(5x+3)$

c) $y = 3\log_6(2x-1)$