

MATH 1650: SECTION 6.4: SOLVING EQUATIONS INVOLVING EXPONENTIAL FUNCTIONS

STRATEGY FOR SOLVING EQUATIONS INVOLVING EXPONENTIAL FUNCTIONS:

1. Isolate the exponential function.
2. (a) If convenient, express both sides with a common base and equate the exponents.
(b) Otherwise, take the natural log of both sides of the equation and use the Power Rule.

EXAMPLE: Solve the following equations. Check your answer using a graphing utility.

1. $2^{3x} = 16^{1-x}$

2. $2000 = 1000 \cdot 3^{-0.1t}$

3. $9 \cdot 3^x = 7^{2x}$

4. $75 = \frac{100}{1 + 3e^{-2t}}$

EXAMPLE: Solve the following equations. Check your answer using a graphing utility.

1. $25^x = 5^x + 6$

HINT: $25^x = (5^2)^x = 5^{2x}$. This is a quadratic in disguise!

2. $\frac{e^x - e^{-x}}{2} = 5$

HINT: $e^{-x} = \frac{1}{e^x}$. Multiply both sides by 2 then by e^x . This is also a quadratic in disguise!

HOMEWORK: Section 6.4: 1 - 33 odd.