

## The JETS Challenge

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### Challenge 49 – The Mona Lisa Challenge

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**Problem:**

*Exactly 500 years ago, “Mona Lisa,” the famous painting by Leonardo da Vinci, was finished in 1506. In 1911 the painting was stolen and not recovered for two years. In 1956 it was damaged by an acid attack and now is viewed behind bullet-proof glass. Throughout its storied existence, the painting has continued to increase in value. In 1962 it was valued at \$100 million and in 2004 at \$608 million. Assuming constant annual inflation rate of 4.3% and the equation*

$$V = P e^{At}, \text{ where}$$

*V is the current value*

*P is the original price),*

*A is the annual inflation rate (as a decimal value) and*

*t is the number of years between V and P.*

*Note: e is the function key “e<sup>x</sup>” on your calculator (and x is the product of A • t in this case) For example e<sup>2</sup> = 7.3890561 and e<sup>3</sup> = 20.085537*

**How much was the painting worth 500 years ago?**

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**Solution:**

$$v = Pe^{At}$$

1962 \$100 million

2004 \$608 million

A= .043

P= original price

$$608,000,000 = Pe^{.043 \times 500}$$

$$\frac{608,000,000}{e^{21.5}} = P$$

$$P \approx \$28$$