

3.1 Exponential Functions and Their Graphs

Name:

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P 39. Graph

$$f(x) = e^x.$$

P 43. Graph

$$f(x) = 2e^{x-2} + 4.$$

P 51. Solve

$$3^{x+1} = 27.$$

P 54. Solve

$$5^{x-2} = \frac{1}{125}.$$

P 57. Solve

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

P 68. Trust Fund A deposit of \$ 5000 is made in a trust that pays 7.5% interest, compounded continuously. It is specified that the balance will be given to the college from which the donor graduated after the money has earned interest for 50 years. How much will the college receive?

P 73. Radioactive Decay Let Q represent a mass of radioactive plutonium (^{239}Pu) (in grams), whose half-life is 24,100 years. The quantity of plutonium present after t years is $Q = 16 \left(\frac{1}{2}\right)^{t/24100}$.

(a) Determine the initial quantity

(b) Determine the quantity present after 75,000 years.

(c) Use a graphing utility to graph the function over the interval $t = 0$ to $t = 150,000$.