

بالتكامل،  $\int \frac{1}{x^2} dx = -\frac{1}{x} + C$

$$f(x) = 1 \Rightarrow \int 1 dx = x + C = 1 \Rightarrow x + C = 1 \Rightarrow C = 1 - x$$

$$f(x) = x \Rightarrow \int x dx = \frac{x^2}{2} + C = 1 \Rightarrow \frac{x^2}{2} + C = 1 \Rightarrow C = 1 - \frac{x^2}{2}$$

$$f(x) = x^2 \Rightarrow \int x^2 dx = \frac{x^3}{3} + C = 1 \Rightarrow \frac{x^3}{3} + C = 1 \Rightarrow C = 1 - \frac{x^3}{3}$$

$$f(x) = \frac{1}{x} \Rightarrow \int \frac{1}{x} dx = \ln|x| + C = 1 \Rightarrow \ln|x| + C = 1 \Rightarrow C = 1 - \ln|x|$$

$$f(x) = \frac{1}{x^2} \Rightarrow \int \frac{1}{x^2} dx = -\frac{1}{x} + C = 1 \Rightarrow -\frac{1}{x} + C = 1 \Rightarrow C = 1 + \frac{1}{x}$$

$$f(x) = \frac{1}{x^3} \Rightarrow \int \frac{1}{x^3} dx = \int x^{-3} dx = \frac{x^{-2}}{-2} + C = -\frac{1}{2x^2} + C = 1 \Rightarrow C = 1 + \frac{1}{2x^2}$$

$$f(x) = \frac{1}{x^4} \Rightarrow \int \frac{1}{x^4} dx = \int x^{-4} dx = \frac{x^{-3}}{-3} + C = -\frac{1}{3x^3} + C = 1 \Rightarrow C = 1 + \frac{1}{3x^3}$$

$$f(x) = \frac{1}{x^5} \Rightarrow \int \frac{1}{x^5} dx = \int x^{-5} dx = \frac{x^{-4}}{-4} + C = -\frac{1}{4x^4} + C = 1 \Rightarrow C = 1 + \frac{1}{4x^4}$$

$$f(x) = \frac{1}{x^6} \Rightarrow \int \frac{1}{x^6} dx = \int x^{-6} dx = \frac{x^{-5}}{-5} + C = -\frac{1}{5x^5} + C = 1 \Rightarrow C = 1 + \frac{1}{5x^5}$$

$$f(x) = \frac{1}{x^7} \Rightarrow \int \frac{1}{x^7} dx = \int x^{-7} dx = \frac{x^{-6}}{-6} + C = -\frac{1}{6x^6} + C = 1 \Rightarrow C = 1 + \frac{1}{6x^6}$$

$$f(x) = \frac{1}{x^8} \Rightarrow \int \frac{1}{x^8} dx = \int x^{-8} dx = \frac{x^{-7}}{-7} + C = -\frac{1}{7x^7} + C = 1 \Rightarrow C = 1 + \frac{1}{7x^7}$$

$$f(x) = \frac{1}{x^9} \Rightarrow \int \frac{1}{x^9} dx = \int x^{-9} dx = \frac{x^{-8}}{-8} + C = -\frac{1}{8x^8} + C = 1 \Rightarrow C = 1 + \frac{1}{8x^8}$$

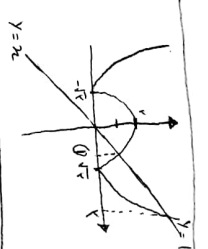
$$f(x) = \frac{1}{x^{10}} \Rightarrow \int \frac{1}{x^{10}} dx = \int x^{-10} dx = \frac{x^{-9}}{-9} + C = -\frac{1}{9x^9} + C = 1 \Rightarrow C = 1 + \frac{1}{9x^9}$$

$$f(x) = \frac{1}{x^{11}} \Rightarrow \int \frac{1}{x^{11}} dx = \int x^{-11} dx = \frac{x^{-10}}{-10} + C = -\frac{1}{10x^{10}} + C = 1 \Rightarrow C = 1 + \frac{1}{10x^{10}}$$

$$f(x) = \frac{1}{x^{12}} \Rightarrow \int \frac{1}{x^{12}} dx = \int x^{-12} dx = \frac{x^{-11}}{-11} + C = -\frac{1}{11x^{11}} + C = 1 \Rightarrow C = 1 + \frac{1}{11x^{11}}$$

$$f(x) = \frac{1}{x^{13}} \Rightarrow \int \frac{1}{x^{13}} dx = \int x^{-13} dx = \frac{x^{-12}}{-12} + C = -\frac{1}{12x^{12}} + C = 1 \Rightarrow C = 1 + \frac{1}{12x^{12}}$$

$$f(x) = \frac{1}{x^{14}} \Rightarrow \int \frac{1}{x^{14}} dx = \int x^{-14} dx = \frac{x^{-13}}{-13} + C = -\frac{1}{13x^{13}} + C = 1 \Rightarrow C = 1 + \frac{1}{13x^{13}}$$



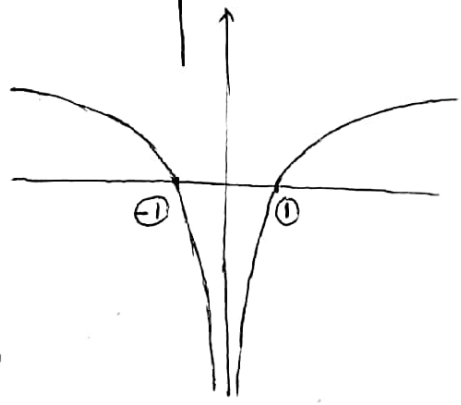
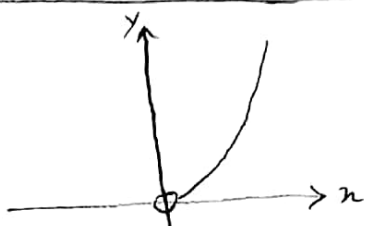
Graph of  $y = -x^2$


$$P_t = \frac{1}{r} P_0 \Rightarrow P_0 \times \left(\frac{r}{100}\right)^t = \frac{1}{r} P_0 \Rightarrow \left(\frac{r}{100}\right)^t = \frac{1}{r} \Rightarrow \log \frac{r}{100} = t$$

$$\log r = 0.13 \Rightarrow \log 100 = 0.17, \log r = 0.141$$

$$\log \frac{1}{r} = \frac{\log \frac{1}{r}}{\log \frac{r}{100}} = \frac{-\log r}{\log r - \log 100} = \frac{-\log r}{\log r + \log 100 - 2 \log 10} = \frac{-0.141}{0.13 + 0.141 - 1.1} = \frac{-0.141}{-0.829} = 0.17$$

$$a) y = 9 \log r^x = x \log r^9 = x^2 \leq x > 0$$



$\rightarrow y = \log_{10} x^2 \rightarrow 10 > 1 \Rightarrow \log_{10} x$   
  
 چون  $x$  بتواند بسیار کوچک شود  $\leftarrow$  نمودار نسبت به محور  $y$  عمودی می شود