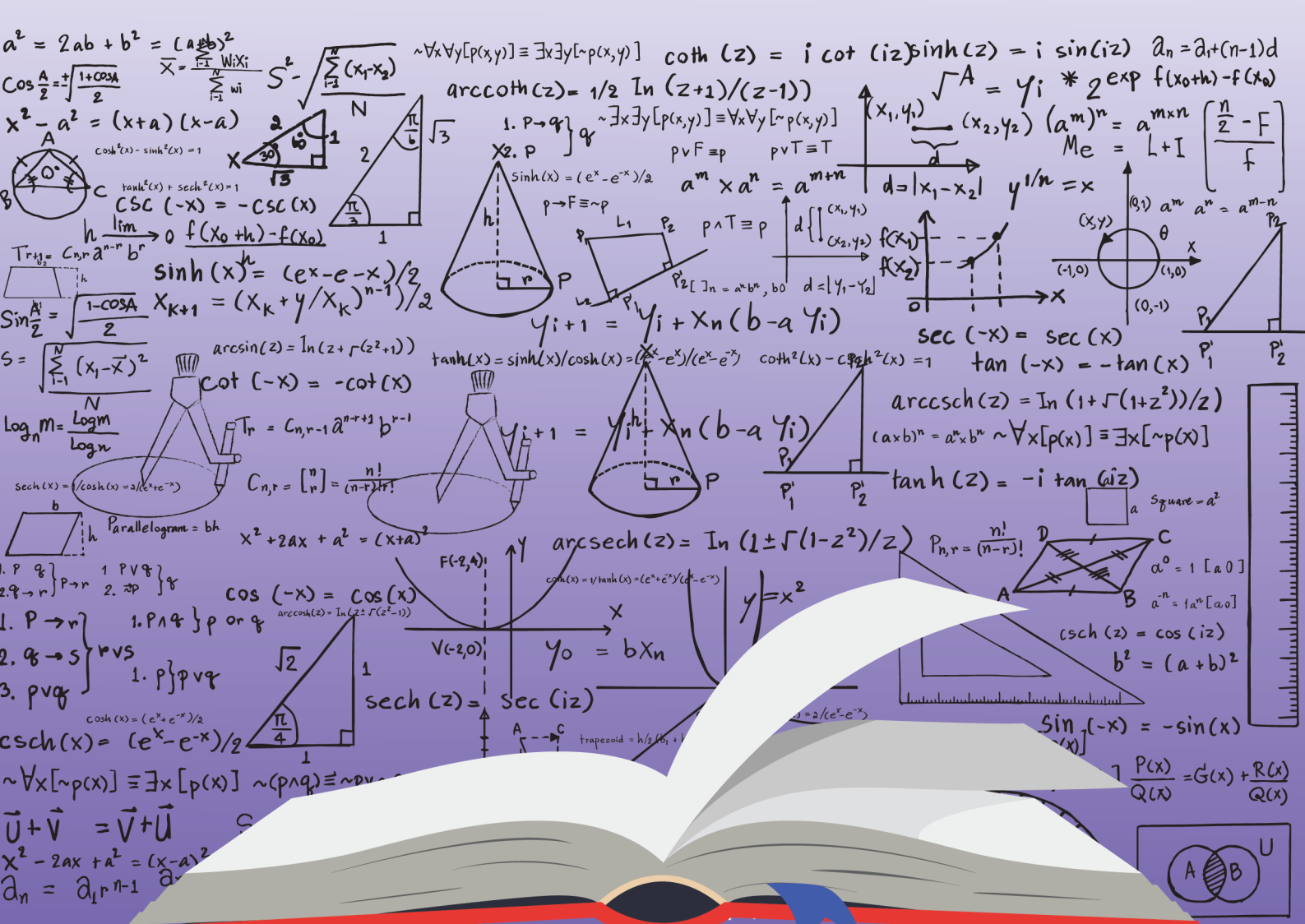


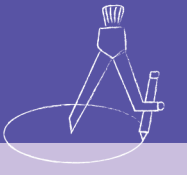
இணைந்த கணிதம்

வகையீடு

14.5

2v.lk





உதாரணம் 17

$$\frac{d}{dx}(ex^2) = e^{x^2} \frac{d}{dx}(x^2) = e^{x^2} 2x = 2xe^{x^2};$$

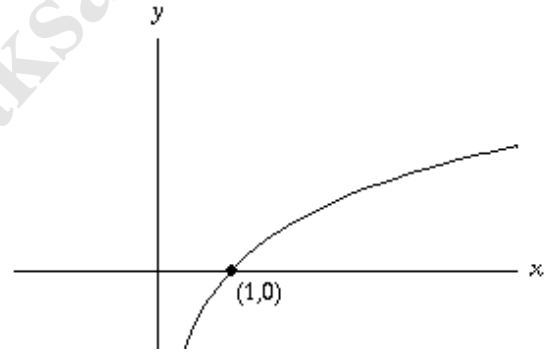
மடக்கைச் சார்பின் பெறுதி



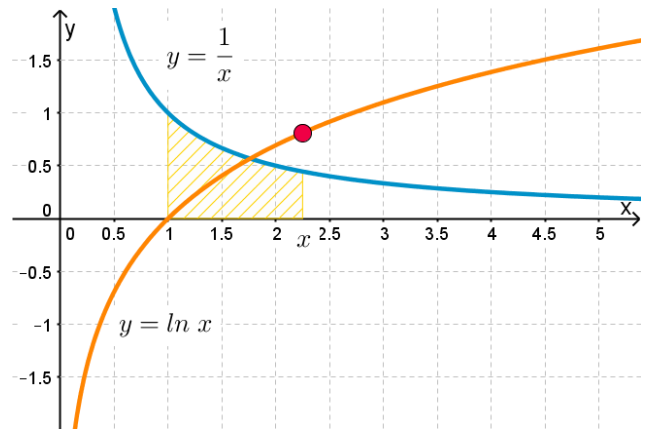
$y = \log_e x$; இங்கு $x > 0$ ஆகும். e ஐ அடியாகக் கொண்ட x இன் மடக்கை $\log_e x$ ஐ $\ln x$ என்பதால் குறிக்கலாம்.

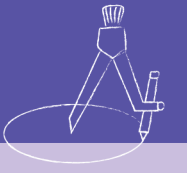
$f(x)$

தேற்றம் 10



$$\frac{d}{dx}(\ln x) = \frac{1}{x}$$





நிறுவல்

$$y = \ln x \text{ என்க.}$$

$$\Rightarrow e^y = x$$

x குறித்து இருபக்கமும் வகையிட

$$e^y \cdot \frac{dy}{dx} = 1$$

$$\Rightarrow \frac{dy}{dx} = \frac{1}{e^y} = \frac{1}{x}$$



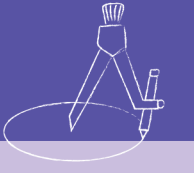
$$\frac{d}{dx}(\ln z) = \frac{d}{dz}(\ln z) \cdot \frac{dz}{dx} = \frac{1}{z} \frac{dz}{dx}$$

உதாரணம் 18

$$\frac{d}{dx}(n\sqrt{x}) = \frac{1}{\sqrt{x}} \frac{d}{dx}(\sqrt{x}) = \frac{1}{\sqrt{x}} \cdot \frac{1}{2\sqrt{x}} = \frac{1}{2x}$$

$$\frac{d}{dx}(e^{\ln 2x}) = e^{\ln 2x} \frac{d}{dx}(\ln 2x) = e^{\ln 2x} \cdot \frac{1}{2x} \cdot 2 = \frac{1}{x} e^{\ln 2x}$$

உதாரணம் 19



உதாரணம் 20

$$\begin{aligned} & \frac{d}{dx} (e^{2x^2} \ln 3x) \\ &= e^{2x^2} \frac{d}{dx} (\ln 3x) + \ln 3x \frac{d}{dx} (e^{2x^2}) \\ &= e^{2x^2} \cdot \frac{1}{3x} \cdot 3 + \ln 3x e^{2x^2} \cdot 4x = \frac{e^{2x^2}}{x} (1 + 4x^2 \ln 3x). \end{aligned}$$

$$\frac{d}{dx} (2^x) \text{ ஐக் காண்க.}$$

$$y = 2^x \text{ என்க.}$$

இரு பக்கமும் e ஐ அடியாகக் கொண்டு மடக்கை எடுக்க

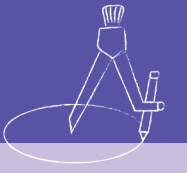
$$\ln y = \ln 2^x$$

$$\implies \ln y = x \ln 2$$

x குறித்து இரு பக்கமும் வகையிட

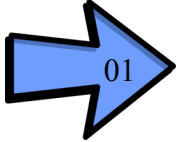
$$\frac{1}{y} \frac{dy}{dx} = \ln 2 \implies \frac{dy}{dx} = y \ln 2 = 2^x \ln 2.$$

உதாரணம் 21

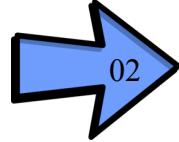


பயிற்சி 2D

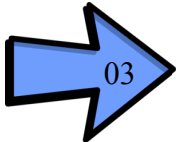
பின்வரும் சார்புகளை x குறித்து வகையிடுக.



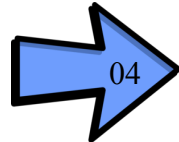
$$e^{4x+1}$$



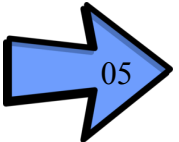
$$e^{\frac{1}{2}x^2+3x-6}$$



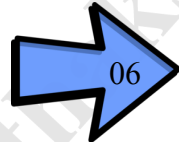
$$xe^x$$



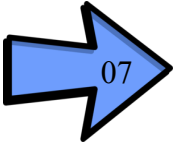
$$ex^2 \ln x$$



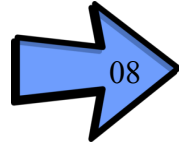
$$e^{\frac{2x+1}{x-1}}$$



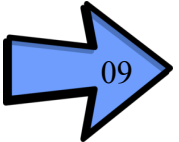
$$e^x + e^{-x}$$



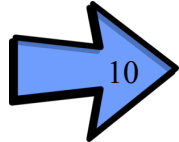
$$\ln 5x$$



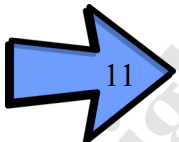
$$x \ln x$$



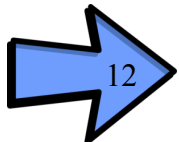
$$e^x \ln x$$



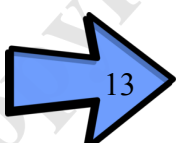
$$\frac{e^{2x}}{\ln 3x}$$



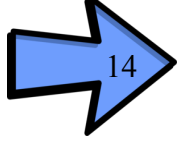
$$3^x$$



$$x^x$$



$$x^{xx}$$



$$2^x + 3^x$$