

**Facit**  
**Dugga 3**  
2024-04-25

1.

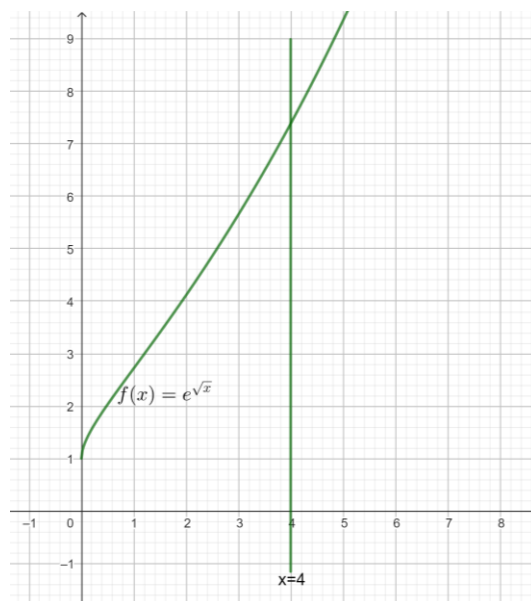
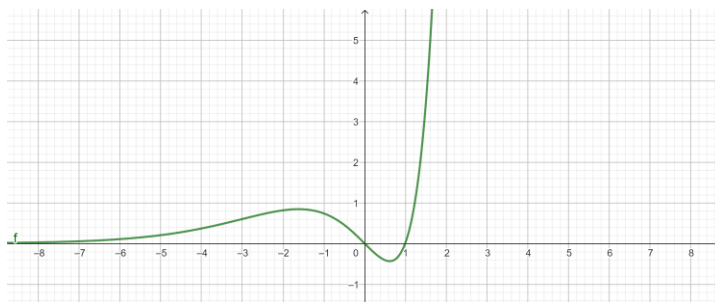
$$a. \int x \ln x dx = \frac{x^2}{2} \ln x - \frac{x^2}{4} + C$$

$$b. \int \frac{x+3}{x^2+3x+2} dx = 2 \ln|x+1| - \ln|x+2| + C$$

$$c. \int_{\pi/2}^{\pi} \cos^3 x dx = -\frac{2}{3}$$

$$d. \int \frac{-\sin x}{\cos^2 x} dx = -\frac{1}{\cos x} + C$$

2.  $A = \int_0^1 (x - x^2)e^x dx = 3 - e$  a.e.



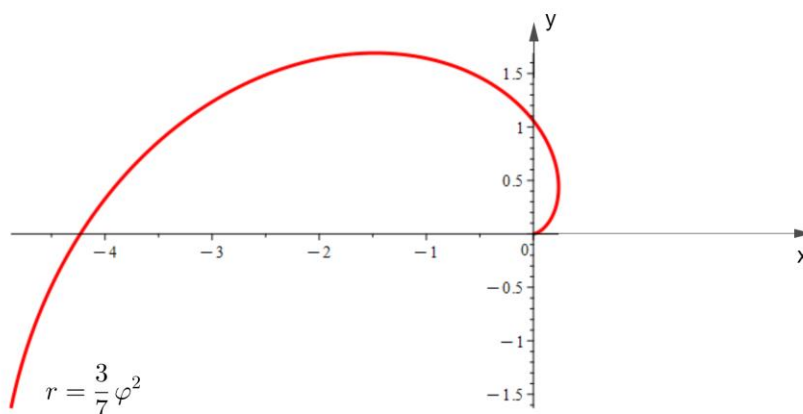
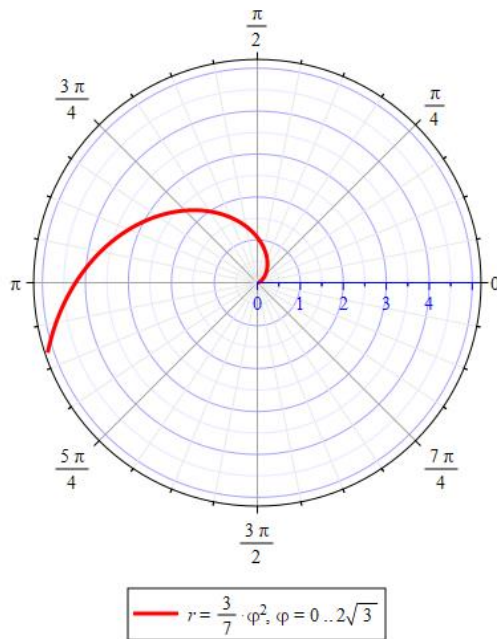
3.  $V = \frac{3e^4+1}{2} \pi$  v.e.

4.

a.  $\int_0^{\infty} x^2 e^{-x^3} dx = \frac{1}{3}$

b.  $\int_0^{\infty} \frac{dx}{\sqrt[3]{x}(1+\sqrt[3]{x})^3} dx = \frac{3}{2}$

5.  $a = 2\sqrt{3}$



eller  $x = \frac{3}{7} \varphi^2 \cos(\varphi)$  och  $y = \frac{3}{7} \varphi^2 \sin(\varphi)$  där  $0 \leq \varphi \leq 2\sqrt{3}$

