EL M1000 2015 Mai

$$\frac{a}{b+c} = \frac{a}{b} + \frac{a}{c}.$$

$$\int_0^1 3x \sin(\pi x^2)\, dx = \int_0^1 3x\, dx \int_0^1 \sin(\pi x^2)\, dx.$$

2a) $\frac{a}{0}$ (fjernes)

$$(\ln(x+1))' = \frac{1}{\ln(x+1)}$$

4a $3u^2 \cdot -2\sin(2x-4) = 3(\cos(2x-4))^2 - 2\sin(2x-4)$

(7) Dette er fysikk!

2b) $\sqrt{x^2-2} = \sqrt{x^2} - \sqrt{2}$

4a $(3\cos 2x - 4)^2(-2\sin(2x-4))$

2b) $\int \frac{x^3}{\sqrt{x^2-2}}\, dx = \int \frac{(x^3)^2}{\sqrt{x^2-2}}\, dx = \int \frac{x^6}{x^2-2}\, dx = \int \frac{x^6}{x^2} - \frac{x^6}{2}\, dx$ ...

2b) $\frac{1}{\sqrt{x^2-2}} = \arcsin x$ ... $\int_2^4 x^3 \arcsin x + C$

4b) $i + (1+\sqrt{3}i)z = 1 \Rightarrow i + z = \frac{1}{1+\sqrt{3}i}$.

2b) $\int_2^4 \frac{x^3}{\sqrt{x^2-2}}\, dx = \int_2^4 \frac{1}{\sqrt{x^2-2}}\, dx + \int_2^4 x^3\, dx$

4 b) $i + (1+\sqrt{3}i)z = 1 \Rightarrow i^2 + z^2 + (\sqrt{3})^2 \cdot (zi)^2 = 1^2$

2 b) $\int_0^1 x \sin(\pi x^2)\, dx = [x \cdot \sin(\pi x^2)]_0^1 = \ldots$

4 b) $i + (1+\sqrt{3}i)z = 1 \Rightarrow z = 1 - (1+\sqrt{3}i) - i$

4 b) —— " —— $\Rightarrow z = \frac{2i}{\sqrt{6} + (1-i)}$

4 b) —— " —— $\Rightarrow z = 1 - \frac{i}{\sqrt{3}i} = re^{\frac{i}{\sqrt{3}i}\theta}$

2b) $x^3(x^2-2)^{-1/2} = x^3(x^{-1/2}-1)$

4a) $\cos^3(2x-4)$ derivert er : $-x\sin^2 + 2\sin^2 + 2\cos^3$

5 $e^{-\ln x} = -x$

4b) $i + (1+\sqrt{3}\,i)z = 1 \Rightarrow i + (1+\sqrt{3}\,i) = \frac{1}{z}$.

4b) $z = \frac{1-i}{1+\sqrt{3}\,i} = 1 - \frac{i}{\sqrt{3}\,i}$

4b) $i + z + \sqrt{3}iz = 1 \Rightarrow z + \frac{\sqrt{3i} \cdot z}{\sqrt{3i}} = \frac{1-i}{\sqrt{3i}} \Rightarrow 2z = \frac{1-i}{\sqrt{3i}}$

$\Rightarrow z = \frac{\frac{1-i}{\sqrt{3i}}}{2} = \frac{1-i \cdot 2}{\sqrt{3i}} = \frac{2-2i}{\sqrt{3i}}$.

4a) $\cos^3(2x-4) = \cos^3(2x) - \cos^3(4)$

$\cos^3(2x) \cdot (2x)' - \cos^3(4) \cdot 4'$

$\cos^3(4x)$

2b) $\int_2^4 \frac{x^3}{\sqrt{x^2-2}} = \int_2^4 \frac{x^3}{x^2-2^{1/2}} = \int_2^4 (x^2-2^{1/2})^{-x^3} dx$

$= -\frac{1}{2}(x^3 - \frac{1}{2}^{3/2})^{x^3} \Big|_2^4 \ldots$

4b) $(1+\sqrt{3}i)z = 1-i \Rightarrow z = 1 - \frac{i}{\sqrt{3i}}$

polar $re^{1-\frac{i}{\sqrt{3}} i\theta}$

2a) "siden det står ikke at finn integralet av funksjonen ved regning, så finner vi dette på digital regneverktøy" ...

3a) "Siden $f(0) \neq f(2)$ så betyr det at funksjonen må ha et nullpunkt"

4a) $\cos^3(2x-4)' = \cos^3(2)$

2b) $\int_2^4 \frac{x^3}{\sqrt{x^2-2}} dx = \int_2^4 \frac{x^3}{x-1} dx$

juni 2015

$$X(1+x^2)^6 = (X+X^3)^6 = X^6 + X^{18}$$

$$\int (\cos x - \sin x)^2 dx = \int \cos x^2 - \sin x^2 \, dx$$

$$\frac{1}{3}\sin x^3 + \frac{1}{3}\cos x^3$$

$$2x e^x + x = 10$$

$$x e^x + x = \frac{\cancel{10}^{5}}{\cancel{2}} = 5$$

$$(1+\cancel{x}^2)^6 \frac{1}{\cancel{x}} = (1+x)^6$$

$$Z = \frac{-i}{1+i} = -\frac{0+\cancel{i}}{1+\cancel{i}} = 0$$

$\int_0^1 x(1+x^2)^6 \, dx$ regnes ut ved å gange ut polynomet!

$$\int \cos^2 x \, dx = \frac{1}{3}\sin^3 x$$