

LATIHAN SOAL-SOAL TEKNIK PENGINTEGRALAN

Buktikan bahwa hasil dari persamaan integral pada ruas kiri adalah persamaan pada ruas kanan

$$1. \int \frac{4x^2+3x+6}{x^2(x^2+3)} dx = \ln \left| \frac{x}{\sqrt{x^2+3}} \right| - \frac{2}{x} + 2 \frac{\sqrt{3}}{3} \tan^{-1} \left(\frac{x}{\sqrt{3}} \right) + C$$

$$2. \int \frac{e^{4x}}{1+e^{8x}} dx = \frac{1}{4} \tan^{-1} (e^{4x}) + C$$

$$3. \int \frac{w}{\sqrt{w+5}} dw = \frac{2}{3} (w+5)^{1/2} (w-10) + C$$

$$4. \int \frac{e^{2y} dy}{\sqrt{9-e^{2y}}} = -\sqrt{9-e^{2y}} + C$$

$$5. \int \frac{dt}{t(t^{1/6}+1)} = \ln |t| - 6 \ln (t^{1/6}+1) + C$$

$$6. \int \frac{t+9}{t^3+9t} dt = \ln |t| - \frac{1}{2} \ln (t^2+9) + \frac{1}{3} \tan^{-1} \left(\frac{t}{3} \right) + C$$

$$7. \int \frac{t dt}{\sqrt{2t+7}} = \frac{1}{6} (2t+7)^{3/2} - \frac{7}{2} (2t+7)^{1/2} + C$$

$$8. \int x^2 e^x dx = e^x (x^2 - 2x + 2) + C$$

$$9. \int \frac{x^3 - 8x^2 - 1}{(x+3)(x-2)(x^2+1)} dx = 2 \ln |x+3| - \ln |x-2| - \tan^{-1} x + C$$

$$10. \int \frac{2x^2+x-8}{x^3+4x} dx = -2 \ln |x| + 2 \ln (x^2+4) + \frac{1}{2} \tan^{-1} \left(\frac{x}{2} \right) + C$$