MAC2312: Calculus 2 - Section 3

Quiz 4: 7.5 Strategy for Integration

May 28, 2015

1. Evaluate $\displaystyle\int \frac{t}{t^4+1}\,dt$.

   A. $-\frac{1}{2}t^{-2}+\frac{1}{2}t^2+C$

   B. $\frac{1}{2}t^{-2}-\frac{1}{2}t^2+C$

   C. $2\tan^{-1}t^2+C$

   D. $\frac{1}{2}\tan^{-1}t^2+C$

$$\int \frac{t}{t^4+1}\,dt = \frac{1}{2}\int \frac{du}{u^2+1} \qquad \begin{array}{c} u=t^2 \\ du=2t\ dt \\ \frac{1}{2}du=t\ dt \end{array}$$

$$= \frac{1}{2}\tan^{-1}u+C$$

$$= \frac{1}{2}\tan^{-1}t^2+C$$