MATH 1710 Tutorial #9

Answers:

1. (a) $\dfrac{x^2e^{3x}}{3} - \dfrac{2xe^{3x}}{9} + \dfrac{2e^{3x}}{27} + c,\ c \in \mathbb{R}$

(b) $x\ln(x^2+4) - 2x + 4\mathrm{Tan}^{-1}\left(\dfrac{x}{2}\right) + c,\ c \in \mathbb{R}$

2. (a) $\dfrac{\cos^{-4} x}{4} + c,\ c \in \mathbb{R}$

(b) $\dfrac{2}{3}\tan^{3/2} x + \dfrac{2}{7}\tan^{7/2} x + c,\ c \in \mathbb{R}$

(c) $\dfrac{x}{16} - \dfrac{\sin 2x}{64} - \dfrac{\sin 4x}{64} + \dfrac{\sin 6x}{192} + c,\ c \in \mathbb{R}$

3. (a) $\ln|x + \sqrt{x^2-5}| + c,\ c \in \mathbb{R}$

(b) $\dfrac{x}{9\sqrt{2-9x^2}} - \dfrac{1}{27}\mathrm{Sin}^{-1}\left(\dfrac{3x}{\sqrt{2}}\right) + c,\ c \in \mathbb{R}$

4. $\frac{\sqrt{5}}{2} + \frac{1}{4}\ln\left(\sqrt{5}+2\right)$

5. $4000\pi g\ [N.]$

6. (a) $\sqrt{x^2+2x-3} - 2\mathrm{Sec}^{-1}\left(\dfrac{x+1}{2}\right) + c,\ c \in \mathbb{R}$

(b) $\dfrac{9}{2}\mathrm{Sin}^{-1}\left(\dfrac{y-3}{3}\right) + \dfrac{3(y-3)}{2}\sqrt{-y^2+6y} + c,\ c \in \mathbb{R}$

(c) $\ln(x^2+6x+13) - \dfrac{9}{2}\mathrm{Tan}^{-1}\left(\dfrac{x+3}{2}\right),\ c \in \mathbb{R}$