Pág 334, 2 a b c

$$a)\int \sqrt{x^3-3x^2+5}\,(x^2-2x)\,dx=\left\{\begin{array}{l} t=x^3-3x^2+5 \\ dt=(3x^2-6x)dx\rightarrow dt=3(x^2-2x)\,dx \\ \dfrac{dt}{3}=(x^2-2x)\,dx \end{array}\right\}=\int\sqrt{t}\;\frac{dt}{3}=$$

$$=\frac{1}{3}\int t^{\frac{1}{2}}\,dt=\frac{1}{3}\,\frac{t^{\frac{1}{2}+1}}{\frac{1}{2}+1}+C=\frac{1}{3}\,\frac{t^{\frac{3}{2}}}{\frac{3}{2}}+C=\frac{2}{9}\sqrt{t^3}+C=\frac{2}{9}\sqrt{(x^3-3x^2+5)^3}+C$$

$$b)\int\frac{1}{\sqrt{1-e^{2\sqrt{x}}}}\,\frac{e^{\sqrt{x}}}{\sqrt{x}}\,dx=\int\frac{1}{\sqrt{1-(e^{\sqrt{x}})^2}}\,\frac{e^{\sqrt{x}}}{\sqrt{x}}\,dx=\left\{\begin{array}{l} t=e^{\sqrt{x}} \\ dt=e^{\sqrt{x}}\,\dfrac{1}{2\sqrt{x}}dx\rightarrow 2dt=\dfrac{e^{\sqrt{x}}}{\sqrt{x}}dx \end{array}\right\}=$$

$$=\int\frac{1}{\sqrt{1-t^2}}\,(2\,dt)=2\int\frac{dt}{\sqrt{1-t^2}}=2\,arcsen\,t+C=2\,arcsen\,(e^{\sqrt{x}})+C$$

$$c)\int\frac{\cos^3 x}{sen^4 x}dx=\frac{-1}{3\,sen^3 x}+\frac{1}{sen\,x}+C$$

$$\frac{\cos^3 x}{sen^4 x}=\frac{\cos x\cdot\cos^2 x}{sen^2 x\cdot sen^2 x}=\frac{\cos x\cdot(1-sen^2 x)}{sen^2 x\cdot sen^2 x}=\frac{\cos x-\cos x\cdot sen^2 x}{sen^2 x\cdot sen^2 x}=$$

$$=\frac{\cos x}{sen^2 x\cdot sen^2 x}-\frac{\cos x\cdot sen^2 x}{sen^2 x\cdot sen^2 x}=\frac{\cos x}{sen^4 x}-\frac{\cos x}{sen^2 x}$$

$$\int\frac{\cos x}{sen^4 x}dx=\left\{\begin{array}{l} t=sen\,x \\ dt=\cos x\,dx \end{array}\right\}=\int\frac{dt}{t^4}=\int t^{-4}dt=\frac{t^{-3}}{-3}+C=\frac{-1}{3\,t^3}+C=\frac{-1}{3\,sen^3 x}+C$$

$$\int\frac{\cos x}{sen^2 x}dx=\left\{\begin{array}{l} t=sen\,x \\ dt=\cos x\,dx \end{array}\right\}=\int\frac{dt}{t^2}=\int t^{-2}dt=\frac{t^{-1}}{-1}+C=\frac{-1}{t}+C=\frac{-1}{sen\,x}+C$$

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$$a)\int \frac{3}{x^2+1}dx = 3\ arctg\ x + C$$

$$b)\int \frac{2x}{x^2+1}dx = \left\{\begin{matrix} t = x^2+1 \\ dt = 2x\,dx \end{matrix}\right\} = \int \frac{dt}{t} = Ln\,|t| + C = Ln\,|x^2+1| + C = Ln\,(x^2+1) +$$

$$c)\int \frac{x^2-1}{x^2+1}dx = \int \left(1 - \frac{2}{x^2+1}\right)dx = \int 1\,dx - \int \frac{2}{x^2+1}dx = x - 2\ arctg\ x + C$$

$$\begin{array}{r|l} x^2-1 & x^2+1 \\ \hline -x^2-1 & 1 \\ -2 & \end{array}$$