(5.5)
Webwork #8-9-12-16

Webwork 5.5 #8 **Book Problem 19**

Evaluate the indefinite integral $\int e^x\sqrt{14+2e^x}\,dx =$ [ ] $+C$

let $u = 14+2e^x$
$du = 2e^x dx$
$dx = \frac{du}{2e^x}$

$= \int e^x\sqrt{u}\,\frac{du}{2e^x} = \int \sqrt{u}\,du$

$= \frac{2}{3}u^{3/2} + C = \boxed{\frac{2}{3}(14+2e^x)^{3/2} + C}$

Webwork 5.5 # 9 **Book Problem 20**

Evaluate the integral $\int 15\sec(2x)\tan(2x)dx =$ [ ] $+C$

let $u = 2x$
$du = 2dx$
$dx = du/2$

$= \int 15\sec u\tan u\,\frac{du}{2} = \frac{15}{2}\int \sec u\tan u\,du = \frac{15}{2}\sec u + C$

$= \boxed{\frac{15}{2}\sec(2x) + C}$

Webwork 5.5 #12 **Book Problem 25**

Evaluate the indefinite integral $\int \frac{7}{\sqrt{1-x^2}\arcsin x}dx =$ [ ] $+C$ $= \int \frac{7}{\sqrt{1-x^2}\,u}\cdot\sqrt{1-x^2}\,du$

let $u = \arcsin x$
$du = \frac{1}{\sqrt{1-x^2}}dx \Rightarrow dx = \sqrt{1-x^2}\,du$

$= 7\int \frac{1}{u}du = 7\ln|u| + C$

$= \boxed{7\ln|\arcsin x| + C}$

Webwork 5.5 #16 **Book Problem 33**

Evaluate the indefinite integral $\int \frac{5+8x}{1+x^2}dx =$ [ ] +C. $= \int \frac{5}{1+x^2}dx + \int \frac{8x}{1+x^2}dx$

$= 5\tan^{-1}x +$ do a substitution for this integral

let $u = 1+x^2$
$du = 2x\,dx$
$dx = \frac{du}{2x}$

so $\int \frac{8x}{1+x^2}dx = \int \frac{8x}{u}\,\frac{du}{2x} = 4\int \frac{1}{u}du = 4\ln|u| + C$

$= 4\ln|1+x^2| + C$

Thus $\int \frac{5+8x}{1+x^2}dx = \boxed{5\tan^{-1}x + 4\ln|1+x^2| + C}$