HW: Page 516 #s 1,5,9,15,19,25

1) $\int (3-2x)^3\,dx \qquad u = 3-2x \quad du = -2dx$

$-\frac{1}{2}\int (3-2x)^3(-2dx)$

$= \frac{1}{2}\frac{(3-2x)^4}{4} + C \quad -\frac{(3-2x)^4}{8} + C$

5) $\int \frac{\sin 3x}{2+\cos 3x}\,dx$ let $u = 2+\cos 3x$

$du = -\sin 3x \cdot 3$

$-\frac{1}{3}\int \frac{1}{2+\cos 3x}(-3\sin 3x)\,dx$

$-\frac{1}{3}\ln|2+\cos 3x| + C$

9) $\int e^{\cot x} \csc^2 x \, dx$

let $u = \cot x$

$du = -\csc^2 x \, dx$

$-\int e^u \, du$

$-e^{\cot x} + C$

15) $\int \frac{e^{\sqrt{x-2}}}{\sqrt{x-2}}\,dx$

let $u = (x-2)^{\frac{1}{2}}$

$du = \frac{1}{2}(x-2)^{-\frac{1}{2}}dx$

$2\int e^{\sqrt{x-2}}\,\frac{1}{2}(x-2)^{-\frac{1}{2}}dx$

$2e^{\sqrt{x-2}} + C$

19) $\int \frac{dx}{\sqrt{x}\, 3^{\sqrt{x}}}$ let $u = -\sqrt{x}$

$du = -\frac{1}{2}\frac{1}{\sqrt{x}}dx$

$-2\int 3^{-\sqrt{x}}\left(\frac{-dx}{2\sqrt{x}}\right)$

$= -2\int a^u du \quad = -2\frac{a^u}{\ln a}$

$= -2\left(\frac{3^{-\sqrt{x}}}{\ln 3}\right)$

25) $\int \frac{e^x}{\sqrt{1-e^{2x}}}\,dx$

let $u = e^x$

$du = e^x dx$

$u^2 = e^{2x}$

$$\int \frac{e^x dx}{\sqrt{1-(e^x)^2}} = \int \frac{du}{\sqrt{1-u^2}} = \sin^{-1} u + C$$

$$= \sin^{-1} e^x + C$$