8.2.11 $\int \frac{4x+3}{\sqrt{x^2-5}}dx = \int \frac{4x\,dx}{\sqrt{x^2-5}} + \int \frac{3dx}{\sqrt{x^2-5}} \Rightarrow$

1) $dt = d(x^2-5) = (x^2-5)'dx = 2x\,dx$.

2) ф-лу № 12 $\int \frac{dx}{\sqrt{x^2+a}} = \ln|x+\sqrt{x^2+a}| + C,\ a=-5] =$

$= \int \frac{2dt}{\sqrt{t}} + 3\int \frac{dx}{\sqrt{x^2+(-5)}} = 2\cdot 2\sqrt{t} + 3\ln|x+$
$+\sqrt{x^2-5}| + C = 4\sqrt{x^2-5} + 3\ln|x+\sqrt{x^2-5}| + C$

8.2.12

$\int e^{\sin^2 x}\cdot \sin 2x\,dx = \left[\begin{array}{l}\sin 2x = 2\sin x\cos x\\ t = \sin^2 x \Rightarrow dt = d(\sin^2 x) =\end{array}\right.$
$= (\sin^2 x)'dx = 2\sin x\cdot\cos x\,dx] =$
$= \int e^t dt = e^t + C = e^{\sin^2 x} + C$

8.2.13 $\int \frac{1-2\sin x}{\cos^2 x}dx = \int \frac{dx}{\cos^2 x} - \int \frac{2\sin x\,dx}{\cos^2 x} =$
$= [$ 1) $\int \frac{dx}{\cos^2 x} = tg x + C$ 2) $t = \cos \Rightarrow dt =$
$d(\cos x) = (\cos x)'dt = -\sin x\,dx \Rightarrow \sin x\,dx = -dt] =$
$= \int \frac{dx}{\cos^2 x} - \int \frac{2\cdot(-dt)}{t^2} = \int \frac{dx}{\cos^2 x} + 2\int t^{-2}dt = tg x$
$+ 2\cdot\frac{t^{-2+1}}{-2+1} + C = tg x - \frac{2}{t} + C = tg x - \frac{2}{\cos x} + C$

8.2.14 $\int \frac{3x-4}{x^2-4}dx = \int \frac{3x\,dx}{x^2-4} - \int \frac{4dx}{x^2-4} =$
$= 3\int \frac{x\,dx}{x^2-4} - 4\int \frac{dx}{x^2-4} = [$ 1) $t = x^2-4 \Rightarrow dt =$
$= d(x^2-4) = 2x\,dt \Rightarrow x\,dx = \frac{1}{2}dt$ 2) $\int \frac{dx}{x^2-a^2} = \frac{1}{2a}\cdot$
$\ln\left|\frac{x-a}{x+a}\right| + C,\ a=2] = 3\cdot\frac{1}{2}\cdot\ln|t| - 4\cdot\frac{1}{4}\cdot$

$\ln\left|\frac{x-2}{x+2}\right| + C = \frac{3}{2}\ln|x^2-4| - \ln\left|\frac{x-2}{x+2}\right| + C$

8.2.16. $\int\sqrt{9-x^2}\,dx = \left[x = 3\sin t \Rightarrow x^2 = 9\sin^2 t \Rightarrow dx = d(3\sin t) = (3\sin t)'dt = 3\cos t\,dt \right] = \int\sqrt{9(1-\sin^2 t)}\cdot 3\cos t\,dt =$

$= \int\sqrt{9\cdot\cos^2 t}\cdot 3\cos t\,dt = \int 3\cos t\cdot 3\cdot\cos t\,dt =$

$= 9\int\cos t\cdot\cos t\,dt = 9\int \cos^2 t\,dt = \left[\int\cos^2 x\,dx = \frac{x}{2} + \frac{1}{4}\sin 2x + C\right] = \left[\cos^2 x = \frac{1+\cos 2x}{2}\right] =$

$= 9\int\frac{1+\cos 2t}{2}\,dt = 9\left(\int\frac{1}{2}\,dt + \int\frac{1}{2}\cdot\cos 2t\,dt\right) =$

$= \frac{9}{2}\left(\int dt + \int\cos 2t\,dt\right) = \frac{9}{2}\left(\int dt + \frac{1}{2}\cdot 2\cdot \int\cos 2t\,dt\right) = \frac{9}{2}\left(\int dt + \frac{1}{2}\int\cos 2t\,d(2t)\right) =$

$= \frac{9}{2}\left(t + \frac{1}{2}\sin 2t\right) + C = \left[x = 3\sin t \Rightarrow \sin t = \frac{x}{3} \Rightarrow t = \arcsin\left(\frac{x}{3}\right)\right] = \frac{9}{2}\left(\arcsin x/3 + \frac{1}{2}\cdot\sin\left(2\cdot\arcsin\frac{x}{3}\right)\right) + C = \left[\sin\left(2\cdot\arcsin\frac{x}{3}\right) = 2\cdot\sin\left(\arcsin\frac{x}{3}\right)\cdot\cos\left(\arcsin\frac{x}{3}\right) = 2\cdot\frac{x}{3}\cdot\sqrt{1-\frac{x^2}{9}} = \frac{2x}{3}\cdot\sqrt{\frac{9-x^2}{9}} = \frac{2x}{9}\sqrt{9-x^2}\right] = \frac{9}{2}\cdot$

$\cdot\left(\arcsin\frac{x}{3} + \frac{1}{2}\cdot\frac{2x\sqrt{9-x^2}}{9}\right) + C = \frac{9}{2}\left(\arcsin\frac{3}{x} + \frac{x\sqrt{9-x^2}}{9}\right) + C$

2.17 $\int\frac{dx}{x\sqrt{x+1}} = \left[x\right.$