$\boxed{10}$ a) $\int \frac{1}{3}x^3 - 2\cdot x^{-2} + 3x^{1/3}\,dx = \frac{1}{3}\cdot\frac{x^4}{4} - 2\cdot\frac{x^{-2+1}}{-2+1} + 3\cdot\frac{x^{1/3+1}}{1/3+1} = \frac{x^4}{12} + \frac{2}{x} + \frac{9}{4}\sqrt[3]{x^4} + C$

b) $\int 3x^{-3} + 4x^{1/2} + 2x^{3/4}\,dx = 3\cdot\frac{x^{-2}}{-2} + 4\cdot\frac{x^{1/2+1}}{1/2+1} + 2\cdot\frac{x^{3/4+1}}{\frac{3}{4}+1} = -\frac{3}{2x^2} + \frac{8}{3}\sqrt{x^3} + \frac{8}{7}\sqrt[4]{x^7} + C$

c) $\int x^{-2} + 4x^{-3/2} + 2x^{5/2}\,dx = \frac{x^{-2+1}}{-2+1} + 4\cdot\frac{x^{-3/2+1}}{-\frac{3}{2}+1} + 2\cdot\frac{x^{5/2+1}}{\frac{5}{2}+1} = -\frac{1}{x} - \frac{8}{\sqrt{x}} + \frac{4}{7}\sqrt{x^7} + C$

d) $\int \sqrt{2x+3}\,dx = \frac{1}{2}\int 2\sqrt{2x+3}\,dx = \frac{1}{2}\cdot\frac{(2x+3)^{1/2+1}}{1/2+1} = \frac{1}{3}\sqrt{(2x+3)^3} + C$

e) $\int \cos(ax+b)\,dx = \frac{1}{a}\int a\cos(ax+b)\,dx = \frac{1}{a}\operatorname{sen}(ax+b) + C$

f) $\int \operatorname{cotg} x\,dx = \int \frac{\cos x}{\operatorname{sen} x}\,dx = \ln|\operatorname{sen} x| + C$

g) $\int \frac{dx}{\operatorname{cotg}\left(\frac{x}{5}\right)} = \int \operatorname{tg}\left(\frac{x}{5}\right)dx = \int \frac{\operatorname{sen}\left(\frac{x}{5}\right)}{\cos\left(\frac{x}{5}\right)}\,dx = 5\int \frac{1}{5}\cdot\frac{\operatorname{sen}\left(\frac{1}{5}x\right)}{\cos\left(\frac{1}{5}x\right)}\,dx = -5\ln\left|\cos\left(\frac{1}{5}x\right)\right| + C$

h) $\int \operatorname{tg} x\,(1+\operatorname{tg}^2 x)\,dx = \frac{\operatorname{tg}^2 x}{2} + C$

i) $\int \frac{\operatorname{sen} x}{1-9\cos^2 x}\,dx = \int \frac{\operatorname{sen} x}{1-(3\cos x)^2}\,dx = \frac{1}{3}\int \frac{3\operatorname{sen} x}{1-(3\cos x)^2}\,dx = -\frac{1}{3}\int\frac{dt}{1-t^2}$

$3\cos x = t \Rightarrow -3\operatorname{sen} x\,dx = dt$

$\frac{1}{1-t^2} = \frac{A}{1-t} + \frac{B}{1+t} \Rightarrow 1 = A(1+t) + B(1-t)$

$\left.\begin{array}{l} t=1 \Rightarrow 1 = 2A \Rightarrow A = 1/2 \\ t=-1 \Rightarrow 1 = -2B \Rightarrow B = -1/2 \end{array}\right\} \Rightarrow \frac{1}{1-t^2} = \frac{1}{2}\cdot\frac{1}{1-t} - \frac{1}{2}\cdot\frac{1}{1+t}$

$\int \frac{1}{1-t^2}\,dt = \frac{1}{2}\int\frac{1}{1-t}\,dt - \frac{1}{2}\int\frac{1}{1+t}\,dt = -\frac{1}{2}\ln|1-t| - \frac{1}{2}\ln|1+t|$

Por tanto:

$\int \frac{\operatorname{sen} x}{1-9\cos^2 x}\,dx \underset{t=3\cos x}{=} -\frac{1}{3}\left[-\frac{1}{2}\ln|1-3\cos x| - \frac{1}{2}\ln|1+3\cos x|\right] = \frac{\ln|1-9\cos^2 x|}{6} + C$

j) $\int \frac{\cos(\pi x)}{\frac{\pi}{2} + 3\operatorname{sen}(\pi x)}\,dx = \frac{1}{3\pi}\int\frac{3\pi\cos(\pi x)}{\frac{\pi}{2} + 3\operatorname{sen}(\pi x)}\,dx = \frac{1}{3\pi}\ln\left|\frac{\pi}{2} + 3\operatorname{sen}(\pi x)\right| + C$

k) $\int \frac{x}{1+2x^2}\,dx = \frac{1}{4}\int\frac{4x}{1+2x^2}\,dx = \frac{1}{4}\ln(1+2x^2) + C$

l) $\int \frac{x}{1+x^2}\,dx = \frac{1}{2}\int\frac{2x}{1+x^2}\,dx = \frac{1}{2}\ln(1+x^2) + C$

m) $\int \frac{1}{x^2}e^{1/x}\,dx = -\int -\frac{1}{x^2}e^{1/x}\,dx = -e^{1/x} + C$

n) $\int 3x\sqrt{1-2x^2}\,dx = -\frac{3}{4}\int -4x\sqrt{1-2x^2}\,dx = -\frac{3}{4}\cdot\frac{(1-2x^2)^{1/2+1}}{\frac{1}{2}+1} = -\frac{1}{2}\sqrt{(1-2x^2)^3} + C$

ñ) $\int \frac{9x\operatorname{sen}(x^2)\,dx}{5\sqrt{2+\cos(x^2)}} = -\frac{9}{5}\cdot\frac{1}{2}\int\frac{-2x\operatorname{sen}(x^2)}{\sqrt{2+\cos(x^2)}}\,dx = -\frac{9}{10}\cdot\frac{(2+\cos(x^2))^{-1/2+1}}{-1/2+1} = -\frac{9}{5}\sqrt{2+\cos(x^2)} + C$