$$= \frac{1}{2} \operatorname{arctg}\left(\frac{x-3}{2}\right) + c$$

(f) $$P \frac{1}{\sqrt{-x^2+2x+3}} = P \frac{1}{\sqrt{3 - x^2+2x}} = P \frac{1}{\sqrt{4-(x-1)^2}} = P \frac{1}{\sqrt{4\left(1-\left(\frac{x-1}{2}\right)^2\right)}}$$

$$3 \underbrace{-x^2+2x}_{\text{completar quadrados}} = 3-(x-1)^2+1 = 4-(x-1)^2$$

$$= \frac{1}{2} P \frac{1}{\sqrt{1-\underbrace{\left(\frac{x-1}{2}\right)}_{u \Rightarrow u' = \frac{1}{2}}^2}} = P \frac{1/2}{\sqrt{1-\left(\frac{x-1}{2}\right)^2}} = \operatorname{arc\,sin}\left(\frac{x-1}{2}\right) + c$$

(g) $$P \frac{1}{\sqrt{\underbrace{\boxed{x^2-4x}}_{(x-2)^2-4}+8}} = P \frac{1}{\sqrt{(x-2)^2+4}} = P \frac{1}{\sqrt{4\left(\left(\frac{x-2}{2}\right)^2+1\right)}} = \frac{1}{2} P \frac{1}{\sqrt{\left(\frac{x-2}{2}\right)^2+1}}$$

$$= P \frac{1/2}{\sqrt{\left(\frac{x-1}{2}\right)^2+1}} = \log\left(\frac{x-1}{2}+\sqrt{\left(\frac{x-1}{2}\right)^2+1}\right) + c$$

(r) $$P \frac{\arcsin x}{\sqrt{1-x^2}} = P \frac{1}{\sqrt{1-x^2}} \arcsin x = P \underbrace{(\arcsin x)'}_{u'} \cdot \underbrace{\arcsin x}_{u}$$

$$= \frac{1}{1+1}(\arcsin x)^{1+1} + c = \frac{1}{2}(\arcsin x)^2 + c$$

(s) $$P \frac{e^{x+2}}{1+e^x} = P \frac{e^x \cdot e^2}{1+e^x} = e^2 P \frac{e^x}{1+e^x} = e^2 P \frac{(1+e^x)'}{1+e^x} = e^2 \log(1+e^x) + c$$

(t) $$P \frac{\ln x}{x(1-\ln^2 x)} = P \frac{1}{1-\ln^2 x} \cdot \ln x \cdot \frac{1}{x} = -\frac{1}{2} P \frac{1}{\underbrace{1-\ln^2 x}_{u}} \underbrace{(-2\ln x)\cdot(\ln x)'}_{u'}$$

$$= -\frac{1}{2} \log(1-\log^2 x) + c$$

(u) $$P(e^{2\cos x}+1)\sin x = P e^{2\cos x} \cdot \sin x + P \sin x = -\frac{1}{2} P(-2\sin x) e^{2\cos x} - \cos x =$$

$$= -\frac{1}{2} e^{2\cos x} - \cos x + c$$

(v) $\displaystyle P \frac{\sin x}{2+3\cos x} = -\frac{1}{3} P \frac{-3\sin x}{2+3\cos x} = -\frac{1}{3} \log|2+3\cos x| + c$

(w) $\displaystyle P \cot g^2 x = P \frac{\cos^2 x}{\sin^2 x} = P \frac{1-\sin^2 x}{\sin^2 x} = P \frac{1}{\sin^2 x} - P\, 1 = -\cot g\, x - x + c$

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2. Primitive /

$\sin ax \cos bx$; $\sin ax \sin bx$; $\cos ax \cos bx$

cu baza ne formula $\sin(\alpha \pm \beta) = \sin\alpha\cos\beta \pm \sin\beta\cos\alpha$

$\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta$

$$\sin(ax+bx) = \sin ax \cos bx + \cancel{\sin bx \cos ax}$$

$$(+)\quad \sin(ax-bx) = \sin ax \cos bx - \cancel{\sin bx \cos ax}$$

$$\sin(ax+bx) + \sin(ax-bx) = 2\sin ax \cos bx \Rightarrow$$

$$\sin(ax+bx) + \sin(ax-bx) = 2\sin ax \cos bx \Rightarrow$$

$$P \sin ax \cos bx = \frac{1}{2} P \sin(ax+bx) + \frac{1}{2} P \sin(ax-bx) =$$

$$= \frac{1}{2} P \sin((a+b)x) + \frac{1}{2} P \sin((a-b)x)$$

$$= \frac{1}{2} \frac{-1}{a+b} \cos((a+b)x) - \frac{1}{2} \frac{1}{a-b} \cos((a-b)x) + c$$

$$P \cos ax \cos bx \stackrel{?}{=}$$

$$\left.\begin{array}{rl} & \cos(ax+bx) = \cos ax \cos bx - \sin ax \sin bx \\ (+) & \cos(ax-bx) = \cos ax \cos bx + \sin ax \sin bx \end{array}\right\}$$

$$\cos(ax+bx) + \cos(ax-bx) = 2\cos ax \cos bx \Rightarrow$$

$$P \cos ax \cos bx = \frac{1}{2} P \cos(ax+bx) + \frac{1}{2} P \cos(ax-bx)$$

$$\cos(ax+bx) + \cos(ax-bx) = 2\cos ax \cos bx \implies$$

$$\int \cos ax \cos bx = \frac{1}{2}\int \cos(ax+bx) + \frac{1}{2}\int \cos(ax-bx)$$

$$= \frac{1}{2}\int \cos((a+b)x) + \frac{1}{2}\int \cos((a-b)x)$$

$$= \frac{1}{2}\,\frac{1}{a+b}\sin((a+b)x) + \frac{1}{2}\,\frac{1}{a-b}\sin((a-b)x) + C$$