ex 3 $(P+5V^{-2})(V-.03)=9.7$ $(5,1)$ (P,V)

$\frac{dV}{dP}=V'(P)$ $(1-10V^{-3}V'(P))(V-.03)+(P+5V^{-2})(V'(P))=0$

$V-.03-10V^{-2}V'(P)+.3V^{-3}V'(P)+PV'(P)+5V^{-2}V'(P)=0$

$+.03 \quad -V$

$V'(P)(-10V^{-2}+.3V^{-3}+P+5V^{-2})=.03-V$

$V'(P)(-5V^{-2}+.3V^{-3}+P)=.03-V$

$V'(P)=\frac{.03-V}{-5V^{-2}+.3V^{-3}+P}$ at $(5,1)$

at $(5,1)$ $=\frac{.03-1}{-5(1)^{-2}+.3(1)^{-3}+5}=\frac{-.97}{.3}=-\frac{97}{30}$

Book $\frac{dV}{dP}=\frac{.03-V}{-10V^{-3}(V-.03)+P+5V^{-2}}$

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ex 6 2nd derivative $2xy^3-5y^2+4x=7$

$2y^3+2x(3y^2)y'(x)-10yy'(x)+4=0$

$2y^3+6xy^2y'(x)-10yy'(x)+4=0$

$6y^2y'(x)+6y^2y'(x)+2yy'(x)(6x)y'(x)+y''(x)(6xy^2)$

$-10y'(x)y'(x)-10yy''(x)=0$

$12y^2y'(x)+12xy[y'(x)]^2-10[y'(x)]^2=10yy''(x)-6xy^2y'(x)$

$12y^2y'(x)+12xy[y'(x)]^2-10[y'(x)]^2=y''(x)(10y-6xy^2)$

$\frac{12y^2y'(x)+12xy[y'(x)]^2-10[y'(x)]^2}{10y-6xy^2}=y''(x)$

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