CORRECTIONS TO TOP-DOWN CALCULUS

FORMAT: ⟨ p.**106** (-10.1) [$a(x$] {$ax(x$}⟩ means on page 106, 10.1 centimeters from the bottom of the page, replace $a(x$ by $ax(x$. ⟨ p.**117** (+7.2) [*ant*] {ate}⟩ means on page 117, 7.2 centimeters from the top of the page, replace ant by ate.

⟨p.**v** (-2.5) [rx^{n-1}] {rx^{r-1}}⟩ ⟨p.**vi** (+3.7) [$r=-1$] {all r}⟩ ⟨p.**19** (-8.5) [) =] {=}⟩

⟨p.**43** (+11) [$(x^3+2)^{2/3}$] {$((x^3+2)^{2/3})^2$}⟩ ⟨p.**45** (−2.0) [congruent] {similar}⟩ ⟨p.**57** (-4.2) [$(\sin^2($] {$(\sin($}⟩

⟨p.**60** (-8.6) [$7(\ell n(x)))^6 x^{-1}$] {$7(\ell n(x)^6_{\mathbf{x}}$}⟩ ⟨p.**60** (-6.5) [$(7/x-\ell n(x))$] {$(7x-\ell n(x))$}⟩

⟨p.**61** (-5 and -2.5) [$\sin^2(x)-\cos^2(x)$] {$-\sin^2(x)+\cos^2(x)$}⟩ ⟨p.**62** (+3.2) [$\sin^2(x)-\cos^2(x)$] {$-\sin^2(x)+\cos^2(x)$}⟩

⟨p.**64** (−10.6) [$L'(x)=1/x$ so $L'(g)=1/g$] {$L'(x)=1/x^2$ so $L'(g)=1/g^2$}⟩ ⟨p.**70** (-9.8) [$\left(\frac{x^4}{}\right.$] {$-\left(\frac{x^4}{}\right.$}⟩

⟨p. **71** (+5.2)[$2^{-9}.10$] {$2^{-9}\ 10$}⟩ ⟨p.**73** (+10.2) [$2^{3/2}$] {$2^{1/2}$}⟩ ⟨p.**77** (+8.5) [x^2-1)] {x^2-1}⟩

⟨p.**78** (+2.8) [x^3] {x^2}⟩ ⟨p.**106** (-10.1) [$a(x$] {$ax(x$}⟩ ⟨p.**117** (+7.2) [ant] {ate}⟩

⟨p.**127** (+5.7) [∞/∞] {0/0}⟩ ⟨p.**127** (+6.2) [at 0] {at 2}⟩ ⟨p.**130** (+8.5) [$x\to 0$] {$x\to 0+$}⟩

⟨p.**130** (-3.7 and -2.6) [$x\to 0$] {$x\to 0+$}⟩ ⟨p.**131** (+3.9 and 12.6) [$x\to 0$] {$x\to 0+$}⟩

⟨p.**144**(+10.7)[is maximal.]{is maximal. What if their sum is minimal instead?}⟩

⟨p.**145** (-9) [Correct.] {Correct. Be inventive. Calculus may disappoint you here}⟩

⟨p.**161** (+3.6) [$(x+4)^{4/5}$] {$(3x+4)^{4/5}$}⟩ ⟨p.**166** (+5.3) [for x] {for $2x$}⟩

⟨p.**166** (+5.3) [for x^2] {for $2x$}⟩ ⟨p.**176** (+4.8) [$+1)^3$] {$+1)^3-1/6$}⟩ ⟨p.**177** (−8.2) [$\leq 3\pi/2$] {$\leq \pi/2$}⟩

⟨p.**180** (-3) [$1+\sec^2(x)$] {$-1+\sec^2(x)$}⟩

⟨p.**181** (+5.7) [4.23(3).using $\sin(x)\cos(x)$] {4.27(3) using $2\sin(x)\cos(x)$}⟩

⟨p.**181** (+6.2)[$\sin^2(2x)$ to obtain] {$(1/4)\sin^2(2x)$ and then evaluate}⟩

⟨p.**195** (−5) [$+\frac{1}{y^2}$] {$-\frac{1}{y^2}$}⟩ ⟨p.**195** (+2.8) [$5x^2-3x-4$] {x^2-2x-1}⟩ ⟨p.**195** (+2.8) [$3\pm 89^{1/2}$] {$1\pm 2^{1/2}$}⟩

⟨p.**195** (+4.4) [$-3+89^{1/2}$] {$-1+2^{1/2}$}⟩ ⟨p.**204** (+9.5) [$1+z^2$)] {$1+z^2)^{1/2}$}⟩

⟨p.**205** (−4.5) [$-\ell n$] {$-0.125\ell n$}⟩ ⟨p.**218** (−11) [have] {have $dA=r\,d\theta\,dr$}⟩ ⟨p.**218** (−10) [$f(r,\theta)\,d\theta$] {$rf(r,\theta)\,d\theta$}⟩

⟨p.**218** (−10) [$f(r,\theta)\,dr$] {$rf(r,\theta)\,dr$}⟩ ⟨p.**225** (−8) [Answer: 2] {Answer: 5/3}⟩

⟨p.**225** (−3.6) [$\int_0^{\pi/2}\int_2^{4\cos(\theta)} r^3\cos^2\,dr\,d\theta$] {$\int_0^{2\pi}\int_0^{1+\cos(\theta)} r^3\cos^2(\theta)\,dr\,d\theta$}⟩ ⟨p.**225** (-3.6) [Answer: $49\pi/2$] {Answer: $49\pi/32$}⟩

⟨p.**225** (-2.9) [$\int\cos^k\,d\theta$] {$\int_0^{2\pi}\cos^k(\theta)\,d\theta$}⟩

⟨p.**226,227** (see photo copy reduction page 4.)⟩

⟨p.**292** (-8.8) [or else you couldn't see it] {centered on the true graph of $a(x)$ which has zero thickness}⟩

⟨p.**292**(-8.4)[line ∈]{line 2 ∈}⟩ ⟨p.**292**(-7.4)[the lines representing the graphs]{the graphs}⟩

$\langle$p.**314**(-10.7)$[-t+t^2]\{-t^2\}\rangle$ $\langle$p.**341**(+3.5)$[\log\tan\frac{1}{2}x.]$ $\left\{\log|\tan\frac{1}{2}x| = \frac{1}{2}\log\frac{1-\cos x}{1+\cos x}\right\}\rangle$

$\langle$p.**378**(-6.6)$[\frac{1}{\tan x}\tan x\sec x|_{x=\pi/8} = \frac{1}{\cos\frac{\pi}{8}}]\{\frac{\sec^2 x}{\tan x}|_{x=\pi/8}\}\rangle$ $\langle$p.**378**(-3.8)$[\sec^2 x]\{-\csc^2 x)\}\rangle$

$\langle$p.**379**(-2.4) $[x^{1/2}-1]$ $\{x^{1/2}+1\}\rangle$

$\langle$p.**379**(-4.8) $\left[\frac{d}{dx}\left(\frac{x^{1/2}-1}{x^{1/4}+1}\right) = \frac{d}{dx}(x^{1/4}-1) = \frac{1}{4}x^{-3/4}\right]$

$\left\{\frac{d}{dx}\left(\frac{x^{1/2}-1}{x^{1/4}+1}\right)^2 = \frac{d}{dx}(x^{1/4}-1)^2 = 2(x^{1/4}-1)\frac{1}{4}x^{-3/4} = \frac{x^{1/4}-1}{2x^{3/4}}\right\}\rangle$

$\langle$p.**380**$(+6.2)$ $[(x\tan x)]$ $\{(x\tan x)'\}\rangle$ $\langle$p.**385** (-2.5) $[-(\frac{1}{x})^x]$ $\{=-(\frac{1}{x})^x\}\rangle$ $\langle$p.**385** (-2.6) $[-(\frac{1}{x}]$ $\{=-\frac{1}{x}\}\rangle$

$\langle$**386** $(+3)$ $[(1-x)]$ $\{(\ell n\ x)\}\rangle$ $\langle$p.**388**$(+6.0)[x+1]$ $\{x=1\}\rangle$ $\langle$p.**388**$(+7)$ $[\frac{8}{7}]$ $\{\frac{8}{19}\}\rangle$

$\langle$p.**391**$(+8)[\cos\left(\frac{x^2+1}{x^3+1}\right)=]\{\cos\left(\frac{x^2+1}{x^3+1}\right)\cdot\}\rangle$ $\langle$p.**392** $(+5.4)[2.43]\{2.43\}\rangle$ $\langle$p.**391**$(+3.7)[89]\{8\}\rangle$

$\langle$p.**391** $(+8)$ $[\cos(\frac{x^2+1}{x^3+1})=]$ $\{\cos(\frac{x^2+1}{x^3+1})\cdot\}\rangle$ $\langle$p.**391**$(+9.8)[\frac{d}{dx}]\{\frac{d}{dt}\}\rangle$ $\langle$p.**391**$(+9.8)[\mathrm{T}]\{t\}\rangle$

$\langle$p.**391**$(-2)[e^{(ln(x)}\ ln(2x+3)]\{e^{(ln(x)ln(2x+3))}\}\rangle$ $\langle$p.**395**$(+7,+8.1,+8.8,+10.1,+11.7,+13.5)[x\to 0]\{x\to 0+\}\rangle$

$\langle$p.**402**$(+9.2)[=3+17/4=29/4.]$ $\{=(3-1/4)+(17/4-1/4)=3+17/4-2/4=3+15/4=27/4.\}\rangle$

$\langle$p.**403**$(-6.3)\left[\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}(\frac{1+\cos t}{2})\,dt\right]$ $\left\{\int_{\frac{-\pi}{2}}^{\frac{\pi}{2}}(\frac{1+\cos 2t}{2})\,dt\right\}\rangle$ $\langle$p.**403**$(-2.6)[=\frac{\pi}{2}+\frac{1}{2}+0=\frac{\pi+1}{2}.]$ $\{=\frac{\pi}{2}+0+0=\frac{\pi}{2}.\}\rangle$

$\langle$p.**406**$(+11.0)\left[\frac{1}{4}\ell n\left(\frac{\cos x-1}{\cos x+1}\right)+c\right]$ $\left\{\frac{1}{4}\ell n\frac{1-\cos x}{1+\cos x}+c\right\}\rangle$

Page 406: Insert the following text at +11.5.

$\{$or $\int csc^3 x\,dx = -\frac{1}{2}csc\,x\cot x - \frac{1}{2}\ell n|csc\,x+\cot x|+c\}$

$\langle$p.**408**$(-9.0)[\int(\sin 3x-\sin x)\,dx = \cos x-\frac{1}{3}\cos 3x]$ $\{\int\frac{1}{2}(\sin 3x-\sin x)\,dx = \frac{1}{2}\cos x-\frac{1}{6}\sin 3x\}\rangle$

$\langle$p.**413**(-9) $[\frac{x^3+1}{x^3-1}]$ $\{\frac{x^3+1}{(x^3-1)^2}\}\rangle$ $\langle$p.**417**$(-10.2)\left[(2^\phi+\frac{\ell n^2 2}{4}2^\phi)\,d\phi\right]$ $\left\{\left(2^\phi+\frac{\ell n^2 2}{4}2^\phi\right)^{1/2}d\phi\right\}\rangle$

Page 417: Insert the following text at +12.0.

An elementary solution to 4.58 (5)

$$
\begin{aligned}
2\pi\int x^{3/2}\left(1+\frac{9}{4}x\right)^{1/2}dx &= 2\pi\int x\cdot x^{1/2}\left(1+\frac{9}{4}x\right)^{1/2}dx \\
&= 2\pi\int x\cdot\left(x+\frac{9}{4}x^2\right)^{1/2}dx \\
&= 2\pi\int x\left[\left(\frac{3}{2}x+\frac{1}{3}\right)^2-\frac{1}{9}\right]^{1/2}dx \\
&= \frac{2\pi}{3}\int x\left[9\left(\frac{3}{2}x+\frac{1}{3}\right)^2-1\right]^{1/2}dx \\
&= \frac{2\pi}{3}\int x\left[\left(\frac{9}{2}x+1\right)^2-1\right]^{1/2}dx
\end{aligned}
$$