5.4 HW 2
P. 347
40 - 60 even

Tuesday - January 19, 2016

(59) $xe^y - 10x + 3y = 0$

$xe^y \cdot y' + 1e^y - 10 + 3 \cdot y' = 0$

$xe^y \cdot y' + 3 \cdot y' = 10 - e^y$

$y'(xe^y + 3) = 10 - e^y$

$$y' = \frac{10 - e^y}{xe^y + 3}$$

$x + y = 0$

$1 + \frac{dy}{dx} = 0$

$\frac{dy}{dx} = -1$

(61) $y = (3 + 2x)e^{-3x}$

$y' = 2 \cdot e^{-3x} + (3 + 2x)e^{-3x} \cdot (-3)$

$y' = e^{-3x}(-7 - 6x)$

$y'' = -3e^{-3x}(-7 - 6x) + e^{-3x}(-6)$

$y'' = e^{-3x}(15 + 18x) = 3e^{-3x}(6x + 5)$

$Ln(m \cdot n) = Ln(m) + Ln(n)$

$Ln(m + n) = Ln(m + n)$

(63) $y = e^x(\cos\sqrt{2}x + \sin\sqrt{2}x)$

$y' = e^x(-\sqrt{2}\sin\sqrt{2}x + \sqrt{2}\cos\sqrt{2}x) + e^x(\cos\sqrt{2}x + \sin\sqrt{2}x)$

$y' = e^x[(1 - \sqrt{2})\sin\sqrt{2}x + (1 + \sqrt{2})\cos\sqrt{2}x]$

$y'' = e^x[\underbrace{(1 - \sqrt{2})\sqrt{2}}_{(\sqrt{2} - 2)}\cos\sqrt{2}x - \underbrace{(1 + \sqrt{2})\sqrt{2}}_{-(\sqrt{2} + 2)}\sin\sqrt{2}x]$

$+ e^x[(1 - \sqrt{2})\sin\sqrt{2}x + (1 + \sqrt{2})\cos\sqrt{2}x]$

$y'' = e^x[(-1 - 2\sqrt{2})\sin\sqrt{2}x + (-1 + 2\sqrt{2})\cos\sqrt{2}x]$

$y'' - 2y' + 3y = 0$

$$\frac{d}{dx}\left[e^{chunk}\right] = e^{chunk} \cdot \frac{d}{dx}[chunk]$$

$y = e^{xy}$

$y' = e^{xy} \cdot [x \cdot y' + 1 \cdot y]$

(60) $e^{xy} + x^2 - y^2 = 10$

$e^{xy}(xy' + y) + 2x - 2y \cdot y' = 0$

$e^{xy} \cdot xy' + e^{xy} \cdot y + 2x - 2y \cdot y' = 0$

$y'(x \cdot e^{xy} - 2y) = -2x - y \cdot e^{xy}$

$$y' = \frac{-2x - y \cdot e^{xy}}{x \cdot e^{xy} - 2y}$$