1

11. (iii) $\qquad \beta(x) \le 0 \qquad\qquad y_1'(x_0) \ge y_2'(x_0)$

$\qquad \Rightarrow \qquad\qquad \alpha(x) < 0 \qquad y_1'(x_0) > y_2'(x_0)$

$\qquad\qquad y_1'(x_0) + \beta(x_0)y_1(x_0) \le y_2'(x_0) + \beta(x_0)y_2(x_0)$

2

2. (10) $\qquad\qquad y' - xe^x - 0 \quad (e^x = v) \Rightarrow \qquad y' - xe^{-y} = 0 \quad (e^y = v)$

4. (5) $\qquad\qquad (\cos y = v) \Rightarrow \qquad\quad (e^y = v)$

4. (6) $\qquad\qquad (e^y = v) \Rightarrow \qquad\quad (\cos y = v)$

4. (7) $\qquad\qquad y' + (x^2 - 1)y = y^2 - 2(x^2 - x + 1)$

$\qquad \Rightarrow \qquad\qquad y' + 2(x-1)y = y^2 + (x^2 - 2x - 2)$

4. (9) $\qquad\qquad y'\cos x + 2y \Rightarrow \qquad\quad y'\sin x + 2y$

4. (10) $\qquad\quad y' + (e^x + x)y = y^2 + (x+1)e^x \Rightarrow \qquad y' + (2e^x - 1)y = y^2 + e^{2x}$

5. (5) $\qquad\qquad (e^x \cos y - 2xy)\,dy \Rightarrow \qquad (e^x \cos y + 2xy)\,dy$

6. (1) $\qquad\qquad (x^2 y^2 + x)\,dy \Rightarrow \qquad\quad (xy^2 + x)\,dy$

3

1. (3) $\qquad\qquad\qquad \Rightarrow \qquad\qquad \mathbb{R}^1$

2. 4. 6. 8. $\qquad\quad y'' + P(x)y + Q(x)y \Rightarrow \qquad y'' + P(x)y' + Q(x)y$

5. (3) $\qquad\qquad y'' - xy' + y \Rightarrow \qquad\quad y'' - xy' + 2y$

7. (4) $\qquad\qquad y'' - 4xy' + 4x^2 y \Rightarrow \qquad y'' - 4xy' + 8x^2 y$

9. (2) $\qquad\qquad y'' - xy' + 2e^{2x}y \Rightarrow \qquad y'' - y' + 2e^{2x}y$

4

2. (1) $\qquad\qquad (D^3 - 3D + 4)y \Rightarrow \qquad\quad (D^3 - 3D^2 + 4)y$

2. (2) $\qquad\qquad (D^3 - 4D + 4)y \Rightarrow \qquad\quad (D^3 - 4D^2 + 4D)y$

5. (4) $\qquad\qquad \mathbf{F}(t) \Rightarrow \qquad\quad \mathbf{F}(x)$

6. (1) $\qquad\qquad\qquad \mathbf{Y}_0 = (C_1, C_2)^t \Rightarrow \qquad\qquad \mathbf{Y}_0 = {}^t(C_1, C_2)$

6. (2) $\qquad\qquad\qquad U \Rightarrow \qquad\qquad U$

5

1. (3) $\qquad\qquad y'' - y' + 2y = e^x \Rightarrow \qquad y'' - y' - 2y = e^x$

3. (1) $\qquad\qquad 2^{k+1} \qquad\quad 2^{k+1} - k - 2$

$\Rightarrow$	2^{k+1}	$(2^{k+1}-k-2)$	

4. (2) n $\Rightarrow$ n

6. $Y_{n.m}(\theta.\ \phi)\ \Rightarrow$ $Y_{n,m}(\theta,\ \phi)$

6. (1) $\Rightarrow$

6. (3) $\dfrac{1}{\sin^2\theta}\dfrac{\partial^2 v}{\partial\theta^2}\ \Rightarrow$ $\dfrac{1}{\sin^2\theta}\dfrac{\partial^2 v}{\partial\phi^2}$

6

2. (3) $F(-n,\ \beta,\ \gamma\,;\,x)\Rightarrow$ $F(-n,\ \beta,\ \beta\,;\,x)$

2. (6) $F(\frac{1}{2},\ 1,\ \frac{3}{2}\,;\,x^2)\Rightarrow$ $F(\frac{1}{2},\ 1,\ \frac{3}{2}\,;\,-x^2)$

3. (7) $3x(1+x)y''+xy'-y=0$

    $\Rightarrow$ $3x(1+x)y''+xy'+y=0$

6. (1) $x^2y''+xy'+4(x^2-\nu^2)y=0$

    $\Rightarrow$ $x^2y''+xy'+4(x^4-\nu^2)y=0$

6. (3) $x^2y''+xy'+k^2xy=0$

    $\Rightarrow$ $4x^2y''+4xy'+(x-\nu^2)y=0$

6. (5) $x^2y''+(1+2n)y'+xy=0$

    $\Rightarrow$ $xy''+(1+2n)y'+xy=0$

6. (9) $x^2y''+xy=0$

    $\Rightarrow$ $y''+x^2y=0$