2. Квазилинейные дифференциальные уравнения в частных производных

2.1. Уравнения вида $f(x,y)\frac{\partial w}{\partial x}+g(x,y)\frac{\partial w}{\partial y}=h(x,y,w)$

1. $\frac{\partial w}{\partial x}+a\frac{\partial w}{\partial y}=f(x)w+g(x)w^k.$
2. $\frac{\partial w}{\partial x}+a\frac{\partial w}{\partial y}=f(x)+g(x)e^{\lambda w}.$
3. $a\frac{\partial w}{\partial x}+b\frac{\partial w}{\partial y}=f(w).$
4. $a\frac{\partial w}{\partial x}+b\frac{\partial w}{\partial y}=f(x)g(w).$
5. $\frac{\partial w}{\partial x}+a\frac{\partial w}{\partial y}=f(x)g(y)h(w).$
6. $ax\frac{\partial w}{\partial x}+by\frac{\partial w}{\partial y}=f(w).$
7. $ay\frac{\partial w}{\partial x}+bx\frac{\partial w}{\partial y}=f(w).$
8. $ax^n\frac{\partial w}{\partial x}+by^k\frac{\partial w}{\partial y}=f(w).$
9. $ay^n\frac{\partial w}{\partial x}+bx^k\frac{\partial w}{\partial y}=f(w).$
10. $ae^{\lambda x}\frac{\partial w}{\partial x}+be^{\beta y}\frac{\partial w}{\partial y}=f(w).$
11. $ae^{\lambda y}\frac{\partial w}{\partial x}+be^{\beta x}\frac{\partial w}{\partial y}=f(w).$
12. $f(x)\frac{\partial w}{\partial x}+g(y)\frac{\partial w}{\partial y}=h(w).$
13. $f(y)\frac{\partial w}{\partial x}+g(x)\frac{\partial w}{\partial y}=h(w).$

2.2. Уравнения вида $\frac{\partial w}{\partial x}+f(x,y,w)\frac{\partial w}{\partial y}=0$

1. $\frac{\partial w}{\partial x}+\left[aw+yf(x)\right]\frac{\partial w}{\partial y}=0.$
2. $\frac{\partial w}{\partial x}+\left[aw+f(y)\right]\frac{\partial w}{\partial y}=0.$

3. $\dfrac{\partial w}{\partial x}+f(w)\dfrac{\partial w}{\partial y}=0.$

4. $\dfrac{\partial w}{\partial x}+\big[f(w)+ax\big]\dfrac{\partial w}{\partial y}=0.$

5. $\dfrac{\partial w}{\partial x}+\big[f(w)+ay\big]\dfrac{\partial w}{\partial y}=0.$

6. $\dfrac{\partial w}{\partial x}+\big[f(w)+g(x)\big]\dfrac{\partial w}{\partial y}=0.$

7. $\dfrac{\partial w}{\partial x}+\big[f(w)+g(y)\big]\dfrac{\partial w}{\partial y}=0.$

8. $\dfrac{\partial w}{\partial x}+\big[yf(w)+g(x)\big]\dfrac{\partial w}{\partial y}=0.$

9. $\dfrac{\partial w}{\partial x}+\big[xf(w)+yg(w)+h(w)\big]\dfrac{\partial w}{\partial y}=0.$

10. $\dfrac{\partial w}{\partial x}+f(x)g(y)h(w)\dfrac{\partial w}{\partial y}=0.$

2.3. Уравнения вида $\dfrac{\partial w}{\partial x}+f(x,y,w)\dfrac{\partial w}{\partial y}=g(x,y,w)$

1. $\dfrac{\partial w}{\partial x}+aw\dfrac{\partial w}{\partial y}=f(x).$

2. $\dfrac{\partial w}{\partial x}+aw\dfrac{\partial w}{\partial y}=f(y).$

3. $\dfrac{\partial w}{\partial x}+\big[aw+f(x)\big]\dfrac{\partial w}{\partial y}=g(x).$

4. $\dfrac{\partial w}{\partial x}+f(w)\dfrac{\partial w}{\partial y}=g(x).$

5. $\dfrac{\partial w}{\partial x}+f(w)\dfrac{\partial w}{\partial y}=g(y).$

6. $\dfrac{\partial w}{\partial x}+f(w)\dfrac{\partial w}{\partial y}=g(w).$

7. $\dfrac{\partial w}{\partial x}+\big[f(w)+g(x)\big]\dfrac{\partial w}{\partial y}=h(x).$

8. $\dfrac{\partial w}{\partial x}+\big[f(w)+g(x)\big]\dfrac{\partial w}{\partial y}=h(w).$

9. $\dfrac{\partial w}{\partial x}+\big[f(w)+yg(x)\big]\dfrac{\partial w}{\partial y}=h(x).$

10. $\dfrac{\partial w}{\partial x}+f(x,w)\dfrac{\partial w}{\partial y}=g(x).$

11. $\dfrac{\partial w}{\partial x}+f(x,w)\dfrac{\partial w}{\partial y}=g(w).$