

MTH 337 : Équations Différentielles

TD2

Résoudre les équations suivantes

1. $y = xy' - e^{y'}$;
2. $y = xy'^2 + y'^2$;
3. $x^2yy'' = (y - xy')^2$;
4. $3y'' = y^{-\frac{5}{3}}$
5. $y^{(4)} = \cos^2 x$, $y(0) = \frac{1}{32}$, $y'(0) = 0$, $y''(0) = \frac{1}{8}$, $y'''(0) = 0$;
6. $y''' \sin^4 x = \sin 2x$;
7. $xy'' = y' \log \frac{y'}{x}$
8. $x\sqrt{1+y^2} + yy'\sqrt{1+x^2} = 0$;
9. $y' = \sin(x - y)$;
10. $(1+x^2)y' - \frac{1}{2}\cos^2 2y = 0$, $y \rightarrow \frac{7\pi}{2}$ pour $x \rightarrow -\infty$;
11. $\ln \cos y dx + x \tan y dy = 0$;
12. $y' + \cos(x + 2y) = \cos(x - 2y)$, $y(0) = \frac{\pi}{4}$;
13. $(x^2 + 2xy)dx + xydy = 0$;
14. $xy' - y = x^2 \cos x$;
15. $y' + 2xy = xe^{-x^2}$;
16. $y' + \frac{y}{x} = x^2y^4$.