

§2.2 FIRST ORDER LINEAR, I

Solve the following first order linear equations by Integrating Factors. NB: This is the *second* technique taught in §2.2 in the text. The first method, 'Euler-Lagrange Two Stage Method' or 'Variation of Parameters' is, in my humble opinion, unnecessarily complicated.

Be sure to check that your answers are correct.

- (1)
$$y' + \frac{y}{t} = t^2$$
- (2)
$$y' + \frac{y}{t-2} = t-1$$
- (3)
$$y' + \tan(t)y = \cos(t)$$
- (4)
$$y' - \frac{4}{t+2}y = (t+2)^4$$
- (5)
$$y' - \frac{2}{t \ln |t|}y = \frac{1}{t}$$
- (6)
$$y' - \frac{y}{t} = \frac{1}{\ln |t|}$$
- (7)
$$ty' + y = \cos(t)$$
- (8)
$$(t+1)y' + y = t$$
- (9)
$$ty' - y = t^2$$
- (10)
$$t^4y' + 4t^3y = \exp(t)$$
- (11)
$$\ln |t|y' + \frac{y}{t} = \sin(t)$$
- (12)
$$\cos(t)y' - \sin(t)y = t^2$$