

Assignment 5 No.5

(a)

```
In[1]:= ClearAll["Global`*"]
```

```
In[2]:= DSolve[x^2 * y'[x] + x * (x + 2) * y[x] == e^x, y[x], x]
```

```
Out[2]= {{y[x] -> \frac{e^x}{2 x^2} + \frac{e^{-x} c_1}{x^2}}}
```

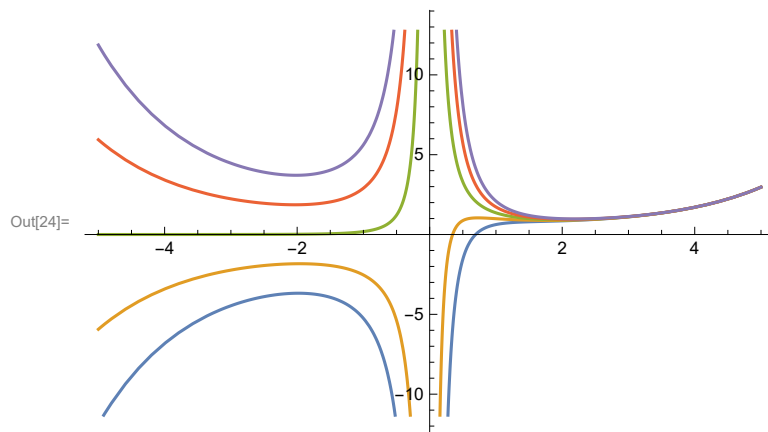
(b)

```
In[10]:= ClearAll["Global`*"]
```

```
In[21]:= y[x] = \frac{e^x}{2 x^2} + \frac{e^{-x} * c1}{x^2}
```

```
Out[21]= \frac{c1 e^{-x}}{x^2} + \frac{e^x}{2 x^2}
```

```
In[24]:= Plot[Evaluate[Table[y[x], {c1, -2, 2}]], {x, -5, 5}]
```




(c)

```
In[25]:= ClearAll["Global`*"]
```

```
In[26]:= sol1 = NDSolve[{y''[x] == y[x]^2, y[0] == 0, y'[0] == 1}, y, {x, 1, 7}]
```

... NDSolve: At x == 3.210195484766732, step size is effectively zero; singularity or stiff system suspected.

```
Out[26]= {{y -> InterpolatingFunction[ Domain: {{1., 3.21}} Output: scalar ]}}
```

```
In[27]:= Plot[y[x] /. sol1, {x, 1, 7}]
```

