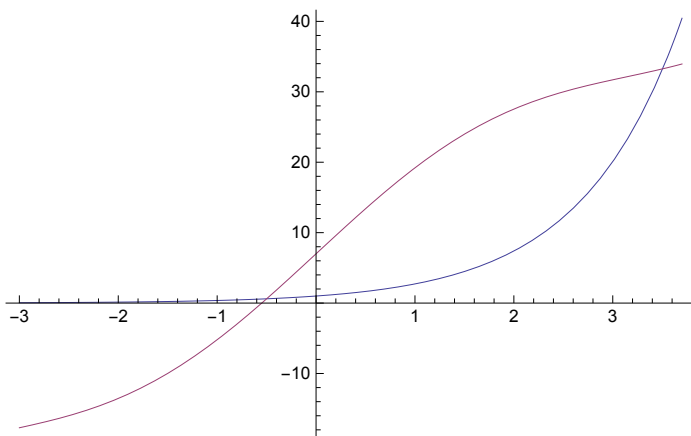


Computing area between curves

Let us compute the area between the curves $y = e^x$ and $y = 5 \sin x + 8x + 7$

```
Plot[{Exp[x], 5 Sin[x] + 8 x + 7}, {x, -3, 3.7}]
```



To find the points of intersection, we use FindRoot :

```
f[x_] = Exp[x]
```

e^x

```
g[x_] = 5 Sin[x] + 8 x + 7
```

$7 + 8x + 5 \sin[x]$

```
FindRoot[f[x] - g[x], {x, -1}]
```

```
{x → -0.548904}
```

Here we have used $x = -1$ as a "seed" since we know that one root lies between -1 and 0 .

```
FindRoot[f[t] - g[t], {t, 3}]
```

```
{t → 3.50437}
```

Here we have used $t = 3$ as a "seed" since we know that one root lies between 3 and 4.

```
a = -0.49968948
```

```
-0.499689
```

```
b = 3.50437387
```

```
3.50437
```

```
Area = NIntegrate[g[x] - f[x], {x, a, b}]
```

```
85.2155
```