Tech Project 2

Derivatives

Kyle Tolliver

```
In[ ]:= D[Sqrt[3 Cos[4 x^2 + 4 x - 7]], x]
```

$$\text{Out[ ]}= -\frac{\sqrt{3}\ (-4-8x)\ \text{Sin}\left[7-4x-4x^2\right]}{2\sqrt{\text{Cos}\left[7-4x-4x^2\right]}}$$

```
In[ ]:= D[(3 x^2 - 4 x + 14) / Sqrt[x - 5], x] // Simplify
```

$$\text{Out[ ]}= \frac{26-64x+9x^2}{2\ (-5+x)^{3/2}}$$

```
In[1]:= f[x_] := 8.3 Sin[x] - 4.2 Cos[x]
In[2]:= f'[x]
```

$$\text{Out[2]}= 8.3\,\text{Cos}[x]+4.2\,\text{Sin}[x]$$

```
In[3]:= f'[5 π / 8]
```

$$\text{Out[3]}= 0.704022$$

```
In[6]:= f[x_] = x^2 - Log[x - 1]
```

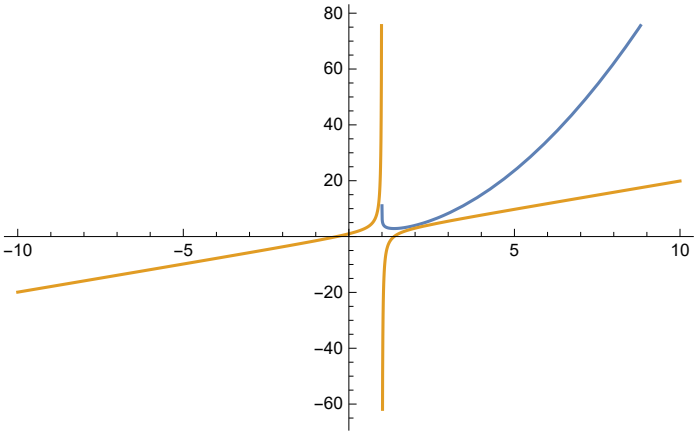
$$\text{Out[6]}= x^2-\text{Log}[-1+x]$$

```
In[7]:= f'[x]
```

$$\text{Out[7]}= -\frac{1}{-1+x}+2x$$

In[8]:=
```
Plot[{f[x], f'[x]}, {x, -10, 10}]
```

Out[8]=



In[11]:=
```
Solve[D[(x^2) Cos^2[y[x]] - Sin[y[x]] == (e^5 x) + (6 y[x] √x), x], y'[x]]
```

Out[11]=

$$\left\{\left\{y'[x] \to -\frac{-e^5 \sqrt{x} + 2 \cos^{2[y[x]]} x^{3/2} - 3\, y[x]}{\sqrt{x}\ \left(-6\sqrt{x} - \cos[y[x]]\right)}\right\}\right\}$$