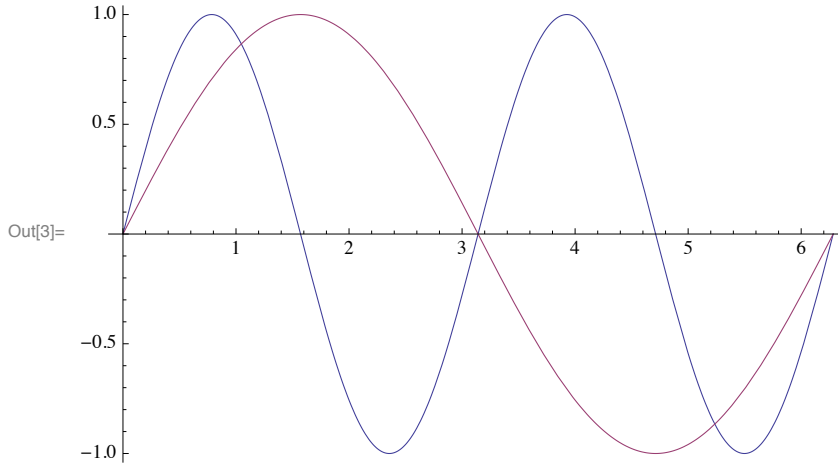


(* AP Calculus AB | Mr. Shubleka | Quiz 3: Notes *)

(* Problem 1 *)

In[3]:= `Plot[{Sin[2 x], Sin[x]}, {x, 0, 2 Pi}]`



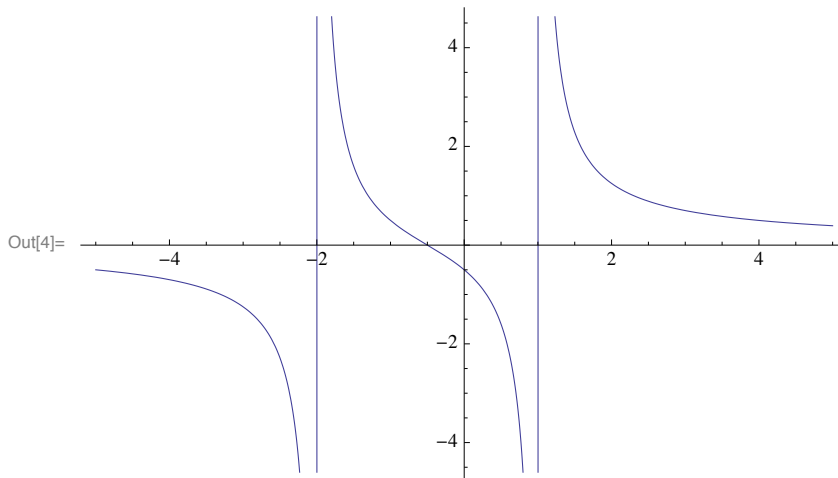
Use the formula $\sin(2x) = 2 \sin(x) \cos(x)$ to expand. Move all terms to one side (do not cancel!) and then factor. Set each factor equal to zero and then solve.

Five solutions, two at the endpoints, three in the interior of the domain, as shown graphically above.

(* Problem 2 *)

(* a *)

In[4]:= `Plot[(2 x + 1) / (x^2 + x - 2), {x, -5, 5}]`

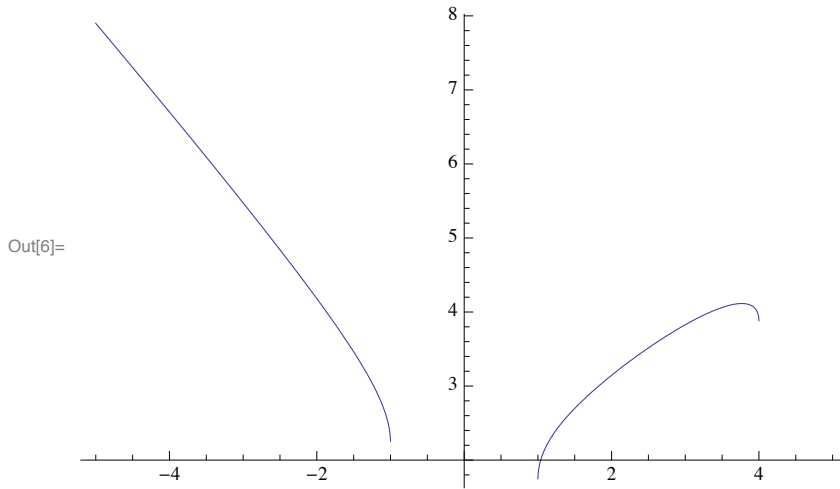


Part a) All reals except for $x = -2$ and $x = 1$.

Part b) All reals.

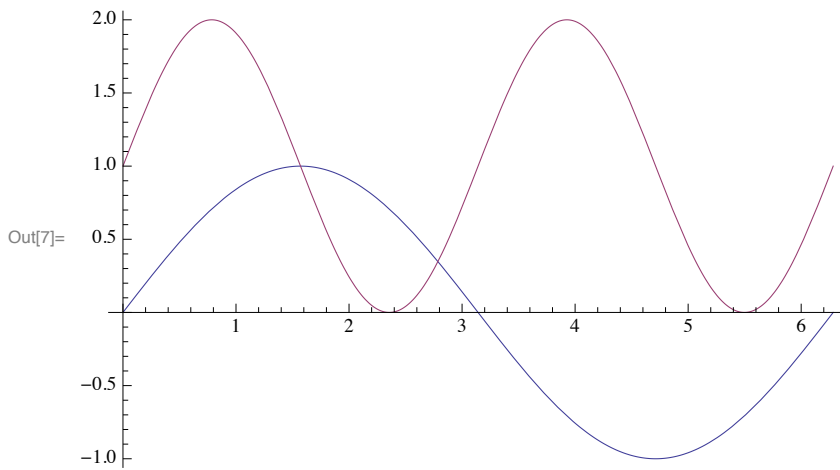
Part c) All reals less than or equal to -1 , and between 1 and 4 (inclusive at endpoints). See graph below.

```
In[6]:= (* c *)  
Plot[Sqrt[4 - x] + Sqrt[x^2 - 1], {x, -5, 5}]
```



(* Problem 3 *)

```
In[7]:= Plot[{Sin[x], 1 + Sin[2 x]}, {x, 0, 2 Pi}]
```



Carefully explain transformation. Horizontal shrinking by a factor of 0.5, vertical shift by 1 unit upward. Label new y-intercept, x-intercept, and identify period.