

## Homework Section 6.3 - Due 2nd June

1. #8 on page 284. Give an expression for *all*  $x$ , not just in the interval  $[0, 2\pi)$ .
  2. #20 on page 285.
  3. #32 on page 285.
  4. #34 on page 285.
  5. (a) Verify that  $2(\cos x - \sin x)(\cos x + \sin x) = 2\cos(2x)$  is an identity.  
(b) Graph  $y = f(x) = 2(\cos x - \sin x)(\cos x + \sin x)$  over  $[0, 2\pi)$ .  
(c) On the same set of axes, sketch the line  $y = 1$  and circle its intersections with  $f(x)$ . How many intersections are there?  
(d) Compute the values of  $x \in [0, 2\pi)$  satisfying  $2(\cos x - \sin x)(\cos x + \sin x) = 1$ . How many solutions should you have?
  6. (a) Graph  $y = \cos^2(2x) - \sin^2(2x)$  over  $[0, 2\pi]$ .  
(Hint: See questions 5 in homework 5.4/5.5)  
(b) Graph  $-\cos(x)$  on the same set of axes. How many intersections are there?  
(c) Solve  $\cos^2(2x) - \sin^2(2x) + \cos(x) = 0$  for  $x \in [0, 2\pi)$ . How many solutions should there be?
- \*7 Solve  $\cos(-2x) + \sin(2x) + 2\sin^2(x) = 0$  for *all*  $x$ .

\*Optional questions.