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Problem Set 3
I Part A
    Sinx siny = cosx cosy - 1 · sinx siny = cosx cosy sinx siny - 1 · sinx siny = cosxcosy - sinx siny
       = cos(x + y)
      Part B
      \sin(\pi + x) + \sin(\pi - x) = \sin \pi \cos x + \cos \pi \sin x + \sin \pi \cos x - \cos \pi \sin x = 2 \sin \pi \cos x = 0
      \frac{(1+\tan^2x)\cdot(1-\cos2x)}{2} = \frac{\sec^2x\cdot(1-(2\cos^2x-1))}{2} = \frac{1}{\cos^2x}\cdot(2-2\cos^2x)
      = \frac{2(1 - (0.5^2 x))}{(0.5^2 x)} = \frac{\sin^2 x}{(0.5^2 x)} = \tan^2 x
      Part D
       \frac{\sin(3x)}{\sin(x)} = \frac{\cos(3x)}{\cos(x)} = \frac{\sin(3x)\cos(x) - \cos(3x)\sin(x)}{\sin(x)} = \frac{\sin(3x - x)}{\sin(x)\cos(x)} = \frac{\sin(2x)}{\sin(x)\cos(x)}
                                                                                                                                   4in(x)(01(x)
         = \frac{2 \cdot \sin(x) \cos(x)}{\sin(x) \cos(x)} = 2
7 Part A
       \cos(3x) = 4 \cos^3(x^2) - 3\cos(x)
       cos 7x cosx - sinzx sinx = 4 cos3(x)-3cos(x)
      (2cos2x-1)cosx - Zsin2xcosx = 4. cos3(x) - 3cos(x)
       2 cos3x - cosx - 2 sin2x cosx = 4 - cos3(x) - 3 cos(x)
        - 25inx2cosx = 2 cos3x - 2 cosx
        - 2 sinx cosx = 2 cosx ( cos x - 1)
        -2 \sin x^2 \cos X = 2 \cos x \cdot - \sin^2 x
       - 7. sinx2cosx = -2cosx sin2x
       Part B
       \tan\left(\frac{x}{2}\right) = \frac{1 - \cos(x)}{\sin(x)}
     \frac{\sin\left(\frac{x}{2}\right)}{\cos\left(\frac{x}{2}\right)} = \frac{\sin(x)}{\sin(x)}
\frac{\sin\left(\frac{x}{2}\right)}{\cos\left(\frac{x}{2}\right)} = \frac{1-\cos(x)}{\sin(x)}
\frac{\cos(\frac{x}{2})}{2\sin(\frac{x}{2})} = \frac{1-\cos(x)}{\sin(x)}
\frac{1-2\sin^2(\frac{x}{2})}{\cos(x)} + 1 = \frac{1-\cos(x)}{\sin(x)}
\frac{1-2\sin^2(\frac{x}{2})}{\cos(x)} + 1 = \frac{1-\cos(x)}{\sin(x)}
        \frac{\cos(x)+1}{\cos(x)} = \frac{\sin(x)}{\sin(x)}
         \frac{-\sin(x)}{\sin(x)} = \frac{\sin(x)}{\sin(x)}
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