Section 3 Review

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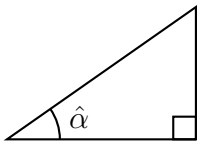
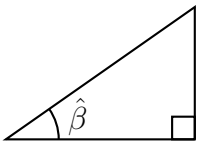
1. Compute the following if α is in QIII and β is in QIV with $\tan(\alpha) = \frac{1}{3}$ and $\sec\beta = \frac{3}{2}$.

   (a) Compute edge lengths for reference triangles for α and β.





   (b) $\sin(\alpha) =$

   (d) $\sin(\beta) =$

   (c) $\cos(\alpha) =$

   (e) $\cos(\beta) =$

   (f) $\sin(\alpha + \beta) =$

   (g) $\cos(\alpha + \beta) =$

   (h) $\tan(\alpha + \beta) =$

   (i) $\sin(2\alpha) =$

   (j) $\cos(\alpha/2) =$

2. Simplify as much as possible.

   (a) $\dfrac{\sec(x)\,\sin(2x)}{\tan(x)} =$

   (b) $\big(1+\cos(2x)\big)\big(1+\tan^2(x)\big) =$

3. Write in terms of $\sin x$ and $\cos x$.

   (a) $\sin\left(\frac{\pi}{6}-x\right) =$

   (b) $\cos\left(2x+\frac{\pi}{6}\right) =$

4. Find all solutions $0 \le x < 2\pi$ for the equations below.

   (a) $2\sin^2 x + 7\cos x = 5$

   (b) $\cos(2x) + 2\sin(x) + 3 = 0$

   (c) $\sin(2x) + \cos(x) = 0$

5. Convert to a sum of sines:
   $\sin(6x)\cos(4x) =$

6. Convert to a product of sine and cosine:
   $\sin(6x) - \sin(2x) =$

7. Draw a rough sketch of the graph of $y = \sin(6x) + \sin(4x)$.
   Hint: Begin by converting to a product.