The first 17 problems will be on Trig Quiz 6. The order of the problems will be rearranged. The order of the solutions might be rearranged.

1. \( \sin^2 \theta = \)

\[
\begin{array}{ccccc}
\text{a)} & \cos^2 \theta - 1 & \text{b)} & 1 - \cos^2 \theta & \text{c)} & \frac{1 + \cos(2\theta)}{2} \\
\text{d)} & \frac{1 + \sin(2\theta)}{2} & \text{e)} & \frac{1}{\sec^2 \theta} \\
\end{array}
\]

2. \( 1 + \tan^2 \theta = \)

\[
\begin{array}{ccccc}
\text{a)} & \csc^2 \theta & \text{b)} & -\csc^2 \theta & \text{c)} & -\sec^2 \theta \\
\text{d)} & \sec^2 \theta & \text{e)} & \frac{1}{\sec^2 \theta} \\
\end{array}
\]

3. \( \sec^2 \theta - \tan^2 \theta \)

\[
\begin{array}{ccccc}
\text{a)} & \csc^2 \theta & \text{b)} & -\csc^2 \theta & \text{c)} & -1 \\
\text{d)} & 0 & \text{e)} & 1 \\
\end{array}
\]

4. \( \sin(-\theta) = \)

\[
\begin{array}{ccccc}
\text{a)} & \sin(\theta) & \text{b)} & -\sin(\theta) & \text{c)} & \cos(\theta) \\
\text{d)} & -\cos(\theta) & \text{e)} & \sin\left(\frac{\theta}{2}\right) \\
\end{array}
\]

5. \( \cos(-\theta) = \)

\[
\begin{array}{ccccc}
\text{a)} & \sin(\theta) & \text{b)} & -\sin(\theta) & \text{c)} & \cos(\theta) \\
\text{d)} & -\cos(\theta) & \text{e)} & \cos\left(\frac{\theta}{2}\right) \\
\end{array}
\]
6. \( \sin(\alpha + \beta) = \)

a) \( \sin \alpha \cos \beta + \cos \alpha \sin \beta \)

b) \( \sin \alpha \cos \beta - \cos \alpha \sin \beta \)

c) \( \cos \alpha \cos \beta - \sin \alpha \sin \beta \)

d) \( \cos \alpha \cos \beta + \sin \alpha \sin \beta \)

e) \( \sin \alpha + \sin \beta \)

7. \( \sin(\alpha - \beta) = \)

a) \( \sin \alpha \cos \beta + \cos \alpha \sin \beta \)

b) \( \sin \alpha \cos \beta - \cos \alpha \sin \beta \)

c) \( \cos \alpha \cos \beta - \sin \alpha \sin \beta \)

d) \( \cos \alpha \cos \beta + \sin \alpha \sin \beta \)

e) \( \sin \alpha - \sin \beta \)

8. \( \cos(\alpha + \beta) = \)

a) \( \sin \alpha \cos \beta + \cos \alpha \sin \beta \)

b) \( \sin \alpha \cos \beta - \cos \alpha \sin \beta \)

c) \( \cos \alpha \cos \beta - \sin \alpha \sin \beta \)

d) \( \cos \alpha \cos \beta + \sin \alpha \sin \beta \)

e) \( \cos \alpha + \cos \beta \)
7. \( \cos(\alpha - \beta) = \)

   a) \( \sin \alpha \cos \beta + \cos \alpha \sin \beta \)
   b) \( \sin \alpha \cos \beta - \cos \alpha \sin \beta \)
   c) \( \cos \alpha \cos \beta - \sin \alpha \sin \beta \)
   d) \( \cos \alpha \cos \beta + \sin \alpha \sin \beta \)
   e) \( \cos \alpha - \cos \beta \)

8. \( \sin(2\alpha) \)

   a) \( 2 \sin \alpha \cos \alpha \)
   b) \( 2 \sin \alpha \)
   c) \( \cos^2 \alpha - \sin^2 \alpha \)
   d) \( \sin^2 \alpha - \cos^2 \alpha \)
   e) \( 2 \cos \alpha \)

9. \( \cos(2\alpha) \)

   a) \( 2 \sin \alpha \cos \alpha \)
   b) \( 2 \sin \alpha \)
   c) \( \cos^2 \alpha - \sin^2 \alpha \)
   d) \( \sin^2 \alpha - \cos^2 \alpha \)
   e) \( 2 \cos \alpha \)
10. \( \sin^2 \theta = \)

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11. \( \cos^2 \theta = \)

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12. The domain for \( \arcsin x \) is

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<td>a) ([-1, 1])</td>
<td>b) ((-\infty, \infty))</td>
<td>c) ([-\frac{\pi}{2}, \frac{\pi}{2}])</td>
<td>d) ([0, \pi])</td>
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13. The domain for \( \arccos x \) is

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14. The domain for \( \arctan x \) is

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15. The range for \( \arcsin x \) is

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16. The range for $\arccos x$ is

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17. The range for $\arctan x$ is

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After the first 17 problems there will be

One problem like this:

18. $\arcsin\left(\sin\left(\frac{7\pi}{4}\right)\right) = \frac{7\pi}{4}$

   a) TRUE  
   b) FALSE

18. $\arccos\left(\cos\left(\frac{\pi}{4}\right)\right) = \frac{\pi}{4}$

   a) TRUE  
   b) FALSE

18. $\cos\left(\arccos\left(\frac{2}{3}\right)\right) = \frac{2}{3}$

   a) TRUE  
   b) FALSE

18. $\tan\left(\arctan(e)\right) = \frac{1}{e}$

   a) TRUE  
   b) FALSE
Then there will be one problem like this:

19. Determine the exact value of \( \cos(\arctan(5)) \)

- a) \( \frac{1}{\sqrt{26}} \)
- b) \( \frac{5}{\sqrt{26}} \)
- c) \( \frac{1}{5} \)
- d) \( \frac{\sqrt{26}}{5} \)
- e) \( \sqrt{26} \)

19. Determine the exact value of \( \tan(\arcsin\left(\frac{2}{3}\right)) \)

- a) \( -\frac{2}{\sqrt{5}} \)
- b) \( \frac{2}{\sqrt{5}} \)
- c) \( -\frac{3}{2} \)
- d) \( \frac{\sqrt{5}}{3} \)
- e) \( -\frac{3}{\sqrt{13}} \)

19. Determine the exact value of \( \cos(\arcsin\left(-\frac{1}{3}\right)) \)

- a) \( -\frac{1}{\sqrt{10}} \)
- b) \( \frac{3}{\sqrt{10}} \)
- c) \( -\frac{2\sqrt{2}}{3} \)
- d) \( \frac{2\sqrt{2}}{3} \)
- e) \( -\frac{2}{3} \)
There will be one problem from this page:

20. \( \cos(15°) = \)

| a) \( \frac{\sqrt{6} + \sqrt{2}}{4} \) | b) \( \frac{\sqrt{6} - \sqrt{2}}{4} \) | c) \( \frac{\sqrt{2} - \sqrt{6}}{4} \) | d) \( \frac{1}{2} - \frac{\sqrt{2}}{2} \) | e) \( \frac{1}{2} + \frac{\sqrt{2}}{2} \) |

20. \( \sin(15°) = \)

| a) \( \frac{\sqrt{6} + \sqrt{2}}{4} \) | b) \( \frac{\sqrt{6} - \sqrt{2}}{4} \) | c) \( \frac{\sqrt{2} - \sqrt{6}}{4} \) | d) \( \frac{\sqrt{3} - \sqrt{2}}{2} \) | e) \( \frac{\sqrt{3} + \sqrt{2}}{2} \) |

20. \( \cos(105°) = \)

| a) \( \frac{\sqrt{6} + \sqrt{2}}{4} \) | b) \( \frac{\sqrt{6} - \sqrt{2}}{4} \) | c) \( \frac{\sqrt{2} - \sqrt{6}}{4} \) | d) \( \frac{\sqrt{3} - \sqrt{2}}{2} \) | e) \( \frac{\sqrt{3} + \sqrt{2}}{2} \) |

20. \( \sin(105°) = \)

| a) \( \frac{\sqrt{6} + \sqrt{2}}{4} \) | b) \( \frac{\sqrt{6} - \sqrt{2}}{4} \) | c) \( \frac{\sqrt{2} - \sqrt{6}}{4} \) | d) \( \frac{\sqrt{3} - \sqrt{2}}{2} \) | e) \( \frac{\sqrt{3} + \sqrt{2}}{2} \) |

20. \( \cos(75°) \)

| a) \( \frac{\sqrt{6} + \sqrt{2}}{4} \) | b) \( \frac{\sqrt{6} - \sqrt{2}}{4} \) | c) \( \frac{\sqrt{2} - \sqrt{6}}{4} \) | d) \( \frac{\sqrt{3} - \sqrt{2}}{2} \) | e) \( \frac{\sqrt{3} + \sqrt{2}}{2} \) |

20. \( \sin(75°) \)

| a) \( \frac{\sqrt{6} + \sqrt{2}}{4} \) | b) \( \frac{\sqrt{6} - \sqrt{2}}{4} \) | c) \( \frac{\sqrt{2} - \sqrt{6}}{4} \) | d) \( \frac{\sqrt{3} - \sqrt{2}}{2} \) | e) \( \frac{\sqrt{3} + \sqrt{2}}{2} \) |
Finally, the last problem will be like this:

21. If $\theta$ is acute and $\sin \theta = \frac{2}{3}$, then $\cos \theta =$

| a) $\frac{1}{3}$ | b) $\frac{5}{9}$ | c) $\frac{\sqrt{5}}{3}$ | d) $-\frac{3}{2}$ | e) $\frac{3}{\sqrt{5}}$ |

21. If $\theta$ is acute and $\sin \theta = \frac{1}{6}$, then $\cos \theta =$

| a) $\frac{5}{6}$ | b) $\frac{35}{36}$ | c) $\frac{\sqrt{35}}{6}$ | d) $-6$ | e) $\frac{6}{\sqrt{35}}$ |

21. If $\theta$ is acute and $\cos \theta = \frac{3}{5}$, then $\sin \theta =$

| a) $\frac{2}{5}$ | b) $\frac{16}{25}$ | c) $\frac{4}{5}$ | d) $-6$ | e) $\frac{6}{\sqrt{35}}$ |

21. If $\theta$ is acute and $\tan \theta = \frac{2}{3}$, then $\sec \theta =$

| a) $\frac{1}{3}$ | b) $-\frac{3}{2}$ | c) $\frac{13}{9}$ | d) $\frac{\sqrt{13}}{3}$ | e) $\frac{5}{3}$ |
21. If $\theta$ is acute and $\tan \theta = \frac{5}{4}$, then $\sec \theta =$

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21. If $\theta$ is acute and $\sec \theta = \frac{3}{2}$, then $\tan \theta =$

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21. If $\theta$ is acute and $\sec \theta = \frac{5}{3}$, then $\tan \theta =$

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