

Simplify as far as possible. No Calculator Test. Do your work on a separate piece of paper. This assignment is due on the day of the test.

<ol style="list-style-type: none"> <li>1. <math>10\sin 5x \cos 5x</math></li> <li>2. <math>\frac{\tan 195^\circ + \tan 15^\circ}{1 - \tan 195^\circ \tan 15^\circ}</math></li> <li>3. <math>\sin 165^\circ \cos 15^\circ + \cos 165^\circ \sin 15^\circ</math></li> <li>4. <math>\cos^2 75^\circ - \sin^2 75^\circ</math></li> <li>5. <math>\cos(45^\circ - x) - \cos(45^\circ + x)</math></li> <li>6. Expand and simplify <math>\csc(90^\circ - x)</math></li> <li>7. Find <math>\cos(\alpha + \beta)</math> if <math>\cos \alpha = \frac{3}{5}</math>, <math>\alpha</math> in Q I and <math>\tan \beta = 3</math>, <math>\beta</math> in Q III.</li> <li>8. Use an <math>\alpha \pm \beta</math> expansion to find an exact value for <math>\cos 15^\circ</math></li> <li>9. Use a half angle formula to find an exact value for <math>\cos 15^\circ</math>.</li> <li>10. If <math>\tan \theta = -\frac{3}{4}</math>, <math>\theta</math> in Q II, find <math>\sin 2\theta</math>.</li> <li>11. If <math>\tan \theta = -\frac{3}{4}</math>, <math>\theta</math> in Q II, find <math>\cos 2\theta</math>.</li> <li>12. If <math>\tan \theta = -\frac{3}{4}</math>, <math>\theta</math> in Q II, find <math>\sin \frac{1}{2}\theta</math>.</li> <li>13. If <math>\tan \theta = -\frac{1}{3}</math>, find <math>\tan 2\theta</math>.</li> <li>14. If <math>\tan \theta = -\frac{1}{3}</math>, find <math>\tan\left(\frac{5\pi}{4} - \theta\right)</math></li> <li>15. Prove: <math>\frac{\sin 2A}{\cos 2A + 1} = \tan A</math></li> <li>16. Prove: <math>\sin(\alpha + \beta) - \sin(\alpha - \beta) = 2\cos \alpha \sin \beta</math></li> <li>17. Solve: <math>\sin 2x + \cos x = 0, 0 \leq x &lt; 360^\circ</math></li> <li>18. Solve: <math>\cos 2x = \cos x + 2, 0 \leq x &lt; 2\pi</math></li> <li>19. Solve: <math>\cos 2x \cos x - \sin 2x \sin x = -1, 0 \leq x &lt; 360^\circ</math></li> <li>20. <math>\frac{\tan 2x + \tan x}{1 - \tan 2x \tan x} = -1</math></li> </ol>	<p>Answers:</p> <ol style="list-style-type: none"> <li>1. <math>5\sin 10x</math></li> <li>2. <math>\frac{\sqrt{3}}{3}</math></li> <li>3. 0</li> <li>4. <math>\frac{-\sqrt{3}}{2}</math></li> <li>5. <math>\sqrt{2} \sin x</math></li> <li>6. <math>\sec x</math></li> <li>7. <math>\frac{9\sqrt{10}}{50}</math></li> <li>8. <math>\frac{\sqrt{6} + \sqrt{2}}{4}</math></li> <li>9. <math>\frac{\sqrt{2 + \sqrt{3}}}{2}</math></li> <li>10. <math>\frac{-24}{25}</math></li> <li>11. <math>\frac{7}{25}</math></li> <li>12. <math>\frac{3\sqrt{10}}{10}</math></li> <li>13. <math>\frac{-3}{4}</math></li> <li>14. 2</li> <li>17. <math>90^\circ, 210^\circ, 270^\circ, 330^\circ</math></li> <li>18. <math>\pi</math></li> <li>19. <math>60^\circ, 180^\circ, 300^\circ</math></li> <li>20. <math>\frac{\pi}{4}; \frac{7\pi}{12}; \frac{11\pi}{12}; \frac{5\pi}{4}; \frac{19\pi}{12}; \frac{23\pi}{12}</math></li> </ol>
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