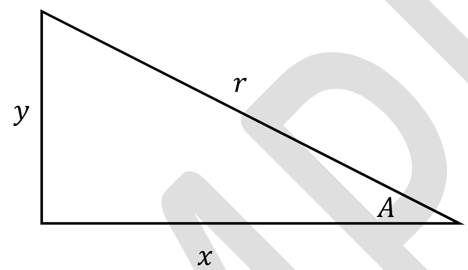
AdeTom Tutors

Grab a Tutor and Secure your Future

Grade 12 Mathematics

Practice Exercise – Trigonometry

1. Given the following sketch, prove that $tanA = \frac{sinA}{cosA}$



2. Simplify the following
   a) $sin^2 200° + cos^2 200°$
   b) $\frac{sin^2 B}{(1+cosB)}$
   c) $\frac{1-sin^2 T}{1-sinT}$
   d) $\cos(180° - A)$
   e) $\sin(180° - A)$
   f) $\sin(720° - A)$
   g) $\tan(360° - A)$
   h) $\cos(A + 540°)$
   i) $\sin(-A)$
   j) $\cos(-135°)$
   k) $\sin(-150°)$
   l) $\sin(A + 720°)$
   m) $\cos(x - 360°)$
   n) $\sin(x - 180°)$
   o) $\tan(x - 360°)$
   p) $\cos(-\mathrm{x} - 720°)$
   q) $\sin(90° - x)$
   r) $\cos(90° + x)$

s) $\sin(630° - x)$
t) $\cos(z - 90°)$
u) $\tan(z - 90°)$
v) $\sin(z - 450°)$
w) $\cos(450° + z)$
x) $\sin(z + 180°)$

3. Expand the following
   a) $\cos(x - 50°)$
   b) $\sin(62°)\ if\ \sin 2° = k$
   c) $cos25°\ if\ cos5° = p$
   d) $\sin(30 + 40°)$

4. Use $cos2A = cos^2A - sin^2A$, to proof the following
   a) $cos2A = 2cos^2A - 1$
   b) $cos2A = 1 - 2sin^2 2A$

5. Simplify the following
   a) $\frac{sin70°}{cos20°}$
   b) $\frac{sin40°}{cos50°}$
   c) $\frac{sin10°}{cos80°}$
   d) $sin^2(180° - P)$
   e) $cos^2(360° - P)$
   f) $\tan(90° - P)$
   g) $tan2P$
   h) $sin930°$
   i) $tan870°$
   j) $cos1485°$
   k) $\sin(1440° - P)$
   l) $\cos(180°)$
   m) $\sin(360°)$
   n) $\tan(270°)$
   o) $\cos(-180°)$
   p) $cos75°$
   q) $sin15°$
   r) $cos105°$
   s) $cos35°cos20° - sin35°sin20°$
   t) $\cos(x - 300°) - \sin(x - 150°)$

6. Given $17sinx - 8 = 0, where\ 90° \leq x \leq 270°$. Determine
   a) $sin2x$
   b) $cos2x$
   c) $tan2x$

d) $\cos(90° - x)$
e) $\sin(x - 45°)$
f) $\cos(x + 60°)$
g) $\tan(90° + x)$

7. Given that $cos26° = k$, determine the following in terms of k
   a) $tan566°$
   b) $sin26°$
   c) $cos254°$
   d) $sin386°$
   e) $cos207°$
   f) $sin64°$
   g) $tan64°$
   h) $\sin(-26)$
   i) $2cos^2 10° - 1$

8. Given that $tanx = p$, show that $sin2x = \frac{2p}{p^2+1}$
9. Simplify the following
   a) $\frac{\tan(180°+A)\cos(180°-A)\sin(360°-A)}{\cos(90°-A)}$
   b) $\frac{\tan(180°+A)\cos(360°-A)}{\sin(180°-A)\cos(90°+A)+\cos(540°+A)\cos(-A)}$
   c) $\cos(90° - 2A)\tan(180° + A)\,sin^2(A - 360°)$
   d) $\frac{\sin(90°+Q)+\cos 180° \sin(-Q)}{\sin(180°)-\tan 135°}$
   e) $(\sqrt{2}cos75° - 1)(1 + \sqrt{2}cos75°)$
   f) $\frac{sin33°}{sin11°} - \frac{cos33°}{cos33°}$

10. Prove the following identities
   a) $\frac{1-2sinBcos}{sinB-cosB} = sinB - cosB$
   b) $\frac{1-tan}{1+tan} = \frac{cos2A}{1+sin2A}$
   c) $\frac{sin2x}{cos2x+sin^2x} = 2tanx$
   d) $\frac{sinx}{1-cosx} - \frac{cosx}{sinx} = \frac{1}{sinx}$
   e) $\frac{sin2x}{sinx} - \frac{cos2x}{cosx} = \frac{1}{cosx}$
   f) $\frac{1-cos2x-sin}{sin2x-cosx} = tanx$
   g) $\frac{\sin(180°+x)\tan(x-360°)cos38°}{\tan(360°-x)\sin(x-180°)cos240°tan225°sin488°} = -2$
   h) $\frac{cos^2(90°+\alpha)}{\cos(-\alpha)+\sin(90°-\alpha)cos\alpha} = \frac{1}{cos\alpha} - 1$