Question #27826

Express this complex number in trigonometric form (5/2)*sqrt(3) + (5/2)*i.

Solution. A complex number z is in trigonometric form if $z = r(cos\varphi + isin\varphi)$, where $r = |z|$.

Denote $z = \frac{5}{2}\sqrt{3} + \frac{5}{2}i$. Then $z = 5(\frac{\sqrt{3}}{2} + \frac{1}{2}\ i)$. It follows immediately that $cos\varphi = \frac{\sqrt{3}}{2}$, $sin\varphi = \frac{1}{2}$ and $r = 5$ and so $= \frac{\pi}{6}$. Thus, $z = 5\left(cos\frac{\pi}{6} + isin\frac{\pi}{6}\right)$.

Answer. $5\left(cos\frac{\pi}{6} + isin\frac{\pi}{6}\right)$.

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