

1 Further Pure Mathematics 1 – Part 2

— Answers

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1.1 (1) base case: show it is true for $n = 1$; (2) inductive step: assume true for $n = k$, then prove it for $n = k + 1$.

1.2 Show the result is true for $n = 1$ (the starting value).

1.3 $x = 4 \cos 0^\circ = 4$, $y = 4 \sin 0^\circ = 0$, so $(4, 0)$.

1.4 $r = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$.

1.5 $x = r \cos \theta$ and $y = r \sin \theta$.

1.6 $r = \sqrt{3^2 + 4^2} = 5$; $\theta = \tan^{-1} \frac{4}{3} \approx 53^\circ$, so $(r, \theta) = (5, 53^\circ)$.