

Entrance Exam to IB Diploma Program

Subject: **Mathematics: Analysis and approaches HL**

Duration: 90 min

Date: 22nd June, 2022

Name: _____

1. Determine lengths of legs of right-angled triangle if the length of its hypotenuse is $c = 2$ and $\tan A = 2\frac{1}{2}$. [5]
2. Find the equation of quadratic function, in general form, which has its maximum value 3 at $x = 4$, and if $f(0) = 11$. [5]
3. Determine real parameter $p \neq 0$ so that the equation $(2px + 1)^2 = p(p + 8x) - 1$ has complex roots. [5]
4. Express $\log_{25} 27$ in terms of a if $\log_3 125 = a$ [5]

Good luck!