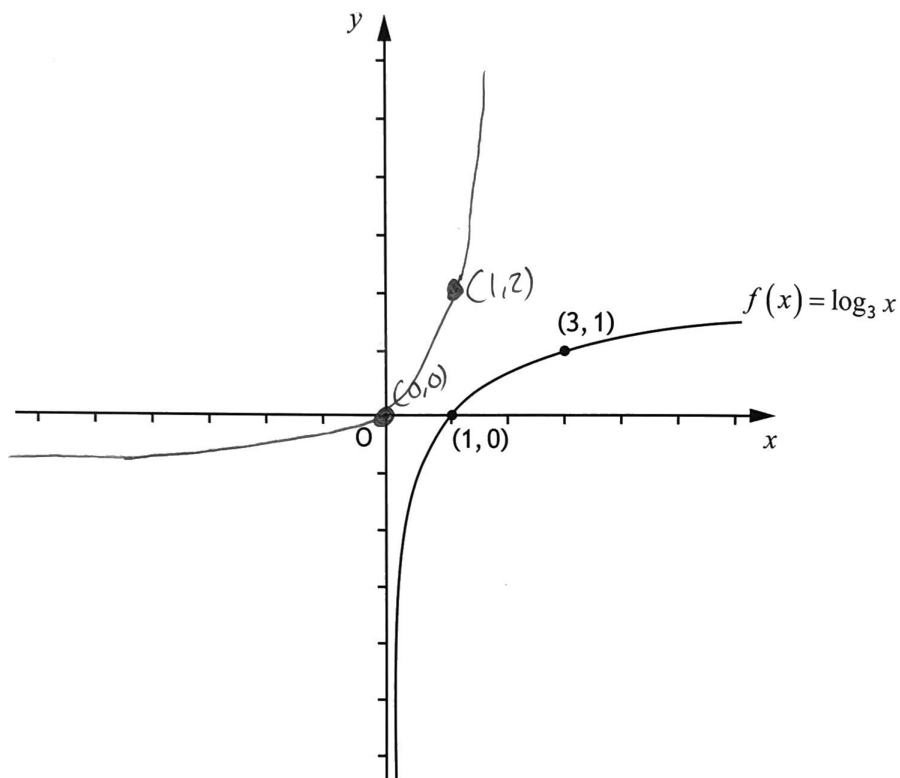


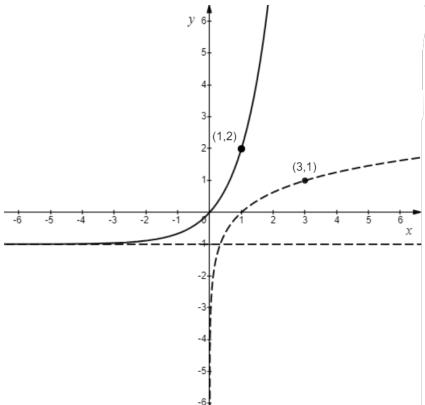
9.

An additional diagram, if required, can be found on *page 13*.

DO NOT
WRITE IN
THIS
MARGIN



* X 8 4 7 7 6 0 1 0 8 *

Question	Generic scheme	Illustrative scheme	Max mark
9.	•¹ graph reflected in $y = x$ •² vertical translation of “-1” unit following a reflection in $y = x$ identifiable from graph •³ sketch of required function	•¹ a concave up curve above the x-axis for $x > 0$ •² curve passing through (0,0) and (1,2) •³ curve approaches the line $y = -1$ from above as $x \rightarrow -\infty$ 	3

Notes:

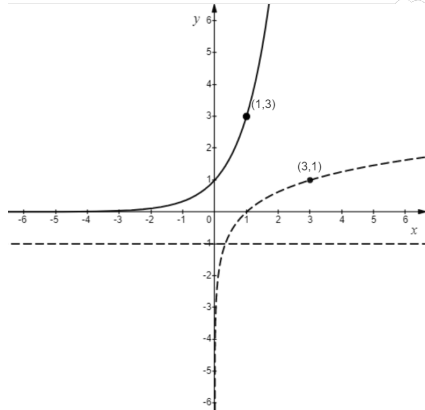
1. For •¹ accept any graph of a function which is concave up within the first quadrant.
2. •¹ is only available where the candidate has attempted to reflect the given curve in the line $y = x$.
3. •³ is only available where the curve passes through (0,0) and (1,2).
4. The line $y = -1$ does not need to be shown.
5. For a rotation, award 0/3 - for example see Candidate D.

Question	Generic scheme	Illustrative scheme	Max mark
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9.(continued)

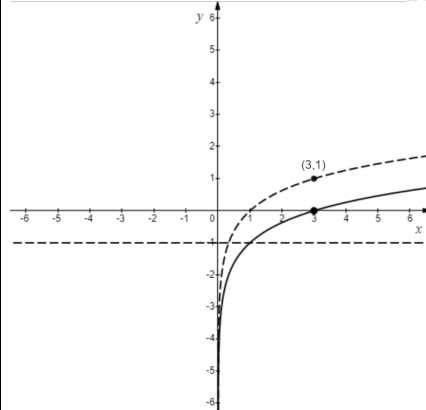
Commonly Observed Responses:

Candidate A - reflection only



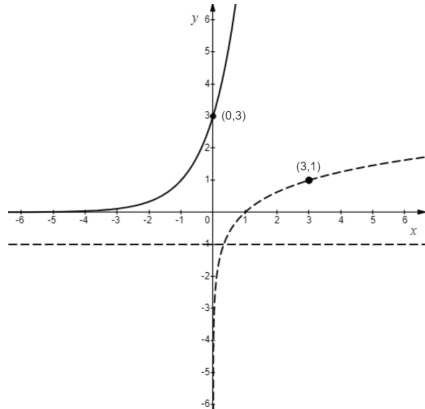
1 ✓ 2 ✗ 3 ✗

Candidate B - translation only



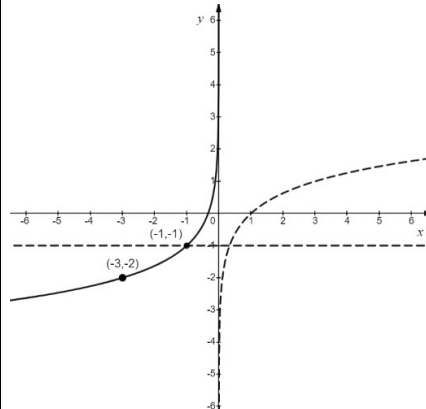
1 ✗ 2 ✗ 3 ✗

Candidate C - incorrect order of transformations



2 ✗ 1 ✓ 3 ✗

Candidate D - rotation



1 ✗ 2 ✗ 3 ✗