MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 2.1 **Math 2000 Worksheet** FALL 2018

SOLUTIONS

1. (a) We require $x + y \geq 0$, or $y \geq -x$. Hence the domain is the set of all points lying on or above the line $y = -x$.

   (b) We require $x \geq 0$ and $y \geq 0$, so the domain is the set of all points lying in the first quadrant of the xy-plane (including the axes).

   (c) We require $xy - 3 \neq 0$, so $y \neq \frac{3}{x}$. Hence the domain is the set of all points not lying on the hyperbola with the equation $y = \frac{3}{x}$.

   (d) We require $16 - x^2 - y^2 \geq 0$ so $x^2 + y^2 \leq 16$, which is the interior of the circle of radius 4 centred at the origin (including the circle). We further require $x^2 + y^2 - 1 > 0$ so $x^2 + y^2 > 1$, which is the exterior of the circle of radius 1 centred at the origin (excluding the circle). So the domain of the function is the set of points outside the circle of radius 1 but inside the circle of radius 4 (including this latter circle).