American University of Beirut
Math 203
Short quiz 2

Name..... **I.D nb.** .....

(7)

1) Find the domain of the following functions:

a) $f(x)=\sqrt{x-3}$

$x-3 \geq 0$

$x \geq 3$

$D_f = [3, +\infty)$ 2

b) $g(x)=\dfrac{x^2}{(x-5)(x-3)}$

$x-5 \neq 0$ and $x-3 \neq 0$

$x \neq 5$ $x \neq 3$

$D_g = \mathbb{R} - \{3, 5\}$

$= (-\infty, 3) \cup (3, 5) \cup (5, +\infty)$ 2

c) $f(x)+g(x)$

$D_{f+g} = D_f \cap D_g$

$= [3, +\infty) \cap \mathbb{R} - \{3, 5\}$ 3

$= (3, 5) \cup (5, +\infty)$

(4)

2) If $f(x)=\sqrt{3x-6}$ and $g(x)=x^2+5$ find:

a) $(g \circ f)(3) = g(f(3))$

$= g(\sqrt{9-6})$ 2

$= g(\sqrt{3})$

$= 3+5 = 8$

b) $(g \circ g)(0) = g(g(0))$

$= g(5)$ 2

$= 25+5$

$= 30$

3) Find the inverse of the function $f(x) = 2x - 3$

$y = 2x - 3$

$2x = y + 3$

$x = \frac{y+3}{2}$

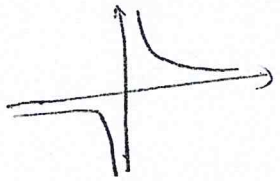
$y = \frac{x+3}{2}$

$f^{-1}(x) = \frac{x+3}{2}$

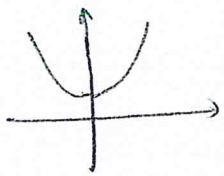
(4)

4) Sketch the graph of the function $f(x) = \begin{cases} \frac{1}{x} & \text{if } x < 0 \\ x^2 + 1 & \text{if } x > 0 \end{cases}$

$y = \frac{1}{x}$



$y = x^2 + 1$



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