Quiz 4

Name: *Key*

Show *all* your work algebraically for each and simplify. No credit is given without supporting work.

1. [4] Assuming that $\log_3 x = 5.3$ and $\log_3 y = 2.1$ find

$$\log_3 \frac{x^3}{27y^2}$$

$$\log_3 \frac{x^3}{27y^2} = \log_3 x^3 - \log_3 27y^2$$

$$= \log_3 x^3 - [\log_3 27 + \log_3 y^2]$$

$$= 3\log_3 x - \log_3 27 - 2\log_3 y$$

$$= 3(5.3) - \log_3 3^3 - 2(2.1)$$

$$= 15.9 - 3 - 4.2$$

$$= 15.9 - 7.2 = \boxed{8.7}$$

Prop 3 ✓-1
Prop 2 ✓-1
Signs ✓-1
Plugged in ✓-1

$$\begin{array}{r} 5.3 \\ \times\ 3 \\ \hline 15.9 \end{array}$$
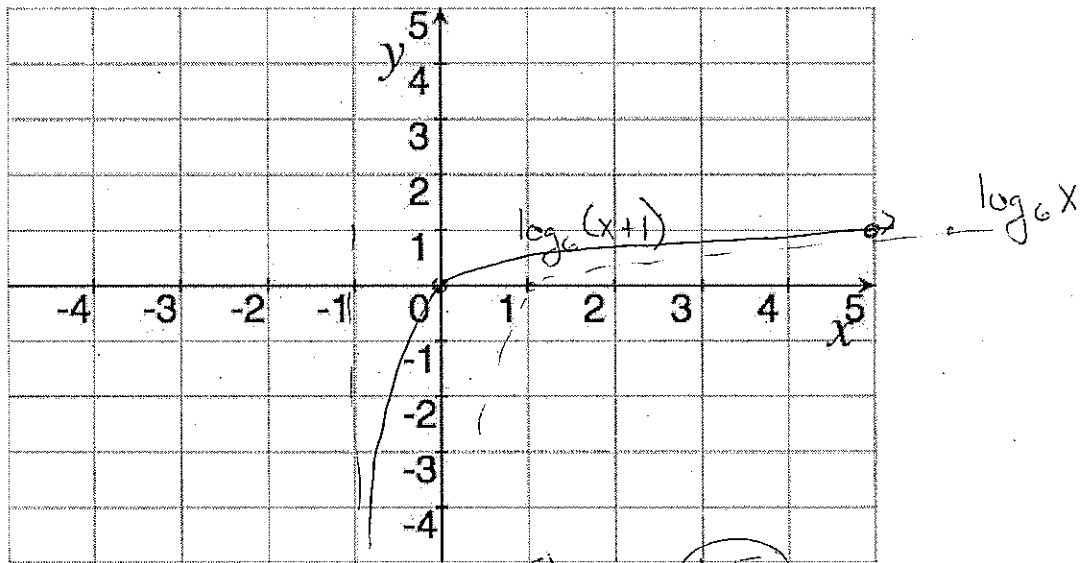
1

2. Let $f(x) = \log_6(x + 1)$.

(a) [1] Finish the following sentence:
The graph of f is much like the graph $\log_6(x)$ but shifted ...

to the left 1 unit.

(b) [2] Plot two points on the graph of f and then sketch the graph of f.

Shape (+.5)
asyn (1.5)
Points (+.5/each)

(c) [3] Find a formula for the inverse function f^{-1}.

$$6^x = \log_6(y+1)$$

$$6^x = y + 1$$

$$6^x - 1 = y$$

2