

Question #2

a) $\frac{3\sqrt{9}}{3\sqrt{108}} = \frac{4^{\frac{1}{3}}}{108^{\frac{1}{3}}} = \boxed{\frac{1}{3}}$

b) $27^{\frac{2}{3}} = \boxed{\sqrt[3]{27^2}}$

c) $2x^2 (3x^5)^2$
 $2x^2 (3^2 x^{10})$
 $2x^2 (9x^{10})$

$18x^{12}$

e) $\frac{3a^{\frac{1}{2}} - a^{\frac{1}{2}}}{a} \rightarrow \frac{2a^{\frac{1}{2}}}{a^{-1}}$

$2a^{\frac{1}{2}} a^1$

$2a^{\frac{3}{2}}$

$\frac{1}{a} = a^{-1}$

d) $\frac{(2x^{-2})^{-3}}{(\frac{1}{x^2})^3} \cdot \frac{x^6}{8x^3} = \frac{x^3}{8}$

$\frac{1}{8} \left(\frac{1}{x^3} \right) \rightarrow \frac{1}{8} = \frac{x^6}{8} \left(\frac{1}{x^3} \right) \rightarrow \frac{x^6}{8x^3} = \frac{x^3}{8}$

f) $\frac{\sqrt[3]{a+b}}{\sqrt[3]{ab}} \rightarrow \sqrt[3]{b^{\frac{1}{2}}} \rightarrow \sqrt[3]{a(b^{\frac{1}{2}})}$
 $\sqrt[3]{ab}$
 $\sqrt[3]{(ab)^{\frac{1}{2}}} = (ab)^{\frac{1}{3}} \rightarrow a^{\frac{1}{3}} b^{\frac{1}{3}}$

Question #3

a) $f(x) = b^x, b > 0$ b) The domain of the function is \mathbb{R}

c) If $b \neq 1$, the range of the function is $(0, \infty)$

3d is located on the next page

Additional things - HW 01
 $f(x) = 2x + 4^x$. Find $f^{-1}(6)$

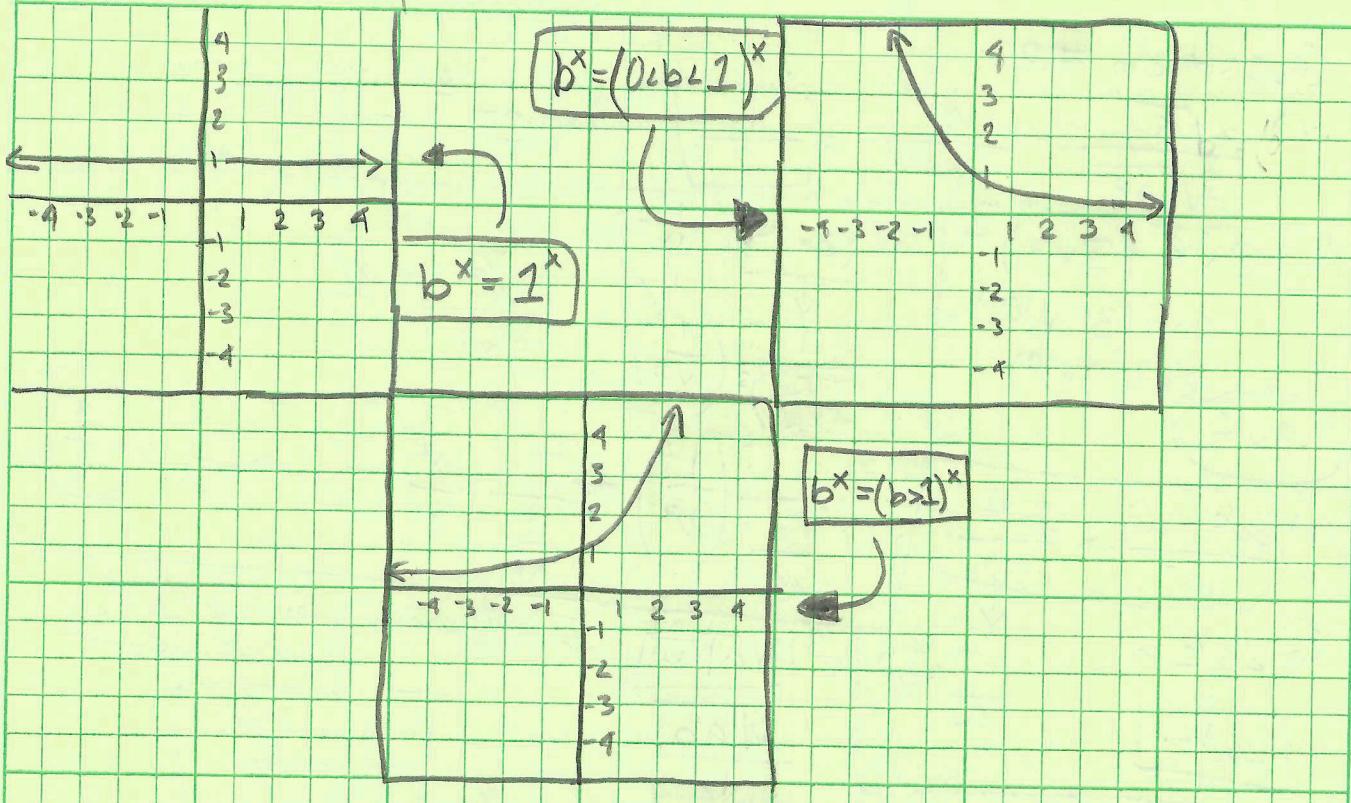
$6 = 2x + 4^x$ $x = 1$

Thus, $f^{-1}(6) = 1$ $4^1 = 4$
 $2(1) = 2$ (6)

$$b^x = 1^x \dots$$

Question 3d

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Question #3

In graph $f(x_0)$, we can see that as the function passes $x=1$, the function starts moving towards zero (or $-y$), thus failing the HLT; concluding $f(x_0)$ is not a one-to-one function.

Reference to the next page (pg 4) for the graphs

Question #4

In the graph $f(x_1)$, the same can be applied from $f(x_0)$ to $f(x_1)$, thus $f(x_1)$ is not one-to-one.

Graphs for question 3 34

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