

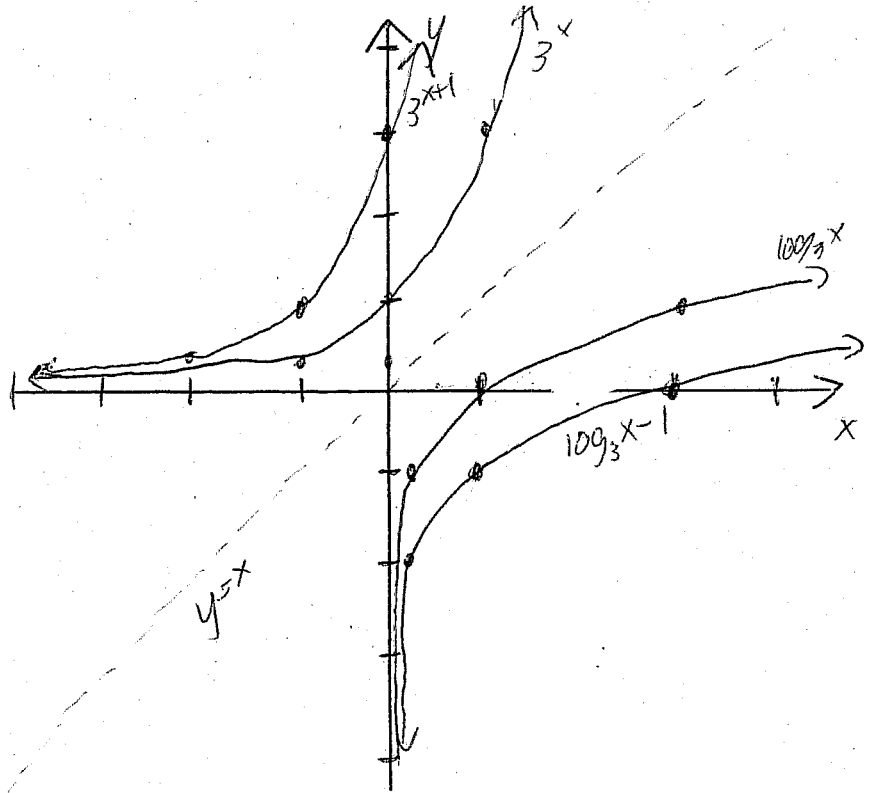
Quiz 7

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. pg.110#6 (6 marks) Graph the pair of functions $y = 3^{x+1}$ and $y = \log_3 x - 1$ with $y = x$ on the same axes.

| X | y |
|----|------------------------|
| -1 | $3^{-1} = \frac{1}{3}$ |
| 0 | $3^0 = 1$ |
| 1 | $3^1 = 3$ |

| X | y |
|---------------|---------------------------|
| $\frac{1}{3}$ | $\log_3 \frac{1}{3} = -1$ |
| 1 | $\log_3 1 = 0$ |
| 3 | $\log_3 3 = 1$ |



Question 2. pg.132#26 (4 marks) Solve for x in the equation.

$$32^{x-3} = \left(\frac{1}{2}\right)^{2x+5} \quad \text{or} \quad \log_{32} 32^{x-3} = \log_{32} \left(\frac{1}{2}\right)^{2x+5}$$

$$(2^5)^{x-3} = (2^{-1})^{2x+5}$$

$$2^{5x-15} = 2^{-2x-5}$$

$$5x-15 = -2x-5$$

$$7x = 10$$

$$x = \frac{10}{7}$$

$$x-3 = (2x+5) \log_{32} \left(\frac{1}{2}\right)$$

$$x-3 = 2x \log_{32} \left(\frac{1}{2}\right) + 5 \log_{32} \left(\frac{1}{2}\right)$$

$$x - 2x \log_{32} \left(\frac{1}{2}\right) = 3 + 5 \log_{32} \left(\frac{1}{2}\right)$$

$$x \left(1 - 2 \log_{32} \left(\frac{1}{2}\right)\right) = 3 + 5 \log_{32} \left(\frac{1}{2}\right)$$

$$x = \frac{3 + 5 \log_{32} \left(\frac{1}{2}\right)}{1 - 2 \log_{32} \left(\frac{1}{2}\right)}$$