

Take Home Quiz # 5

- Justify and show the means by which you arrive at your answers using equations, pictures, calculations, geometry, algebra steps, and/or technology. *You will not receive full credit if your answer is not supported by work that is legible and organized.*
- Place a **box** around your final answer. *It won't be graded if you do not do this!*
- Make your answers and their presentation in a professional and easily understandable format ... make this your clearest and best work! *Points will be deducted for disorganized, sloppy work.*

10.1

1. Let $f(x) = 3x^2 + 4$ and $g(x) = 4x - 1$. Find the following

a. $(f \circ g)(2)$

b. $(g \circ f)(2)$

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a. $(f \circ g)(x)$

b. $(g \circ f)(x)$

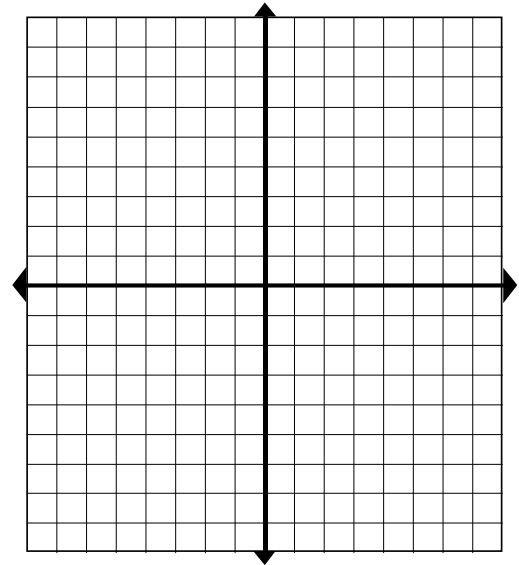
3. Consider the function $g(x) = (x + 7)^3$

a. Determine if the function is one-to-one

b. Find a formula for the inverse $g^{-1}(x)$.

10.2

4. Graph $y = 2^{x+3} - 8$



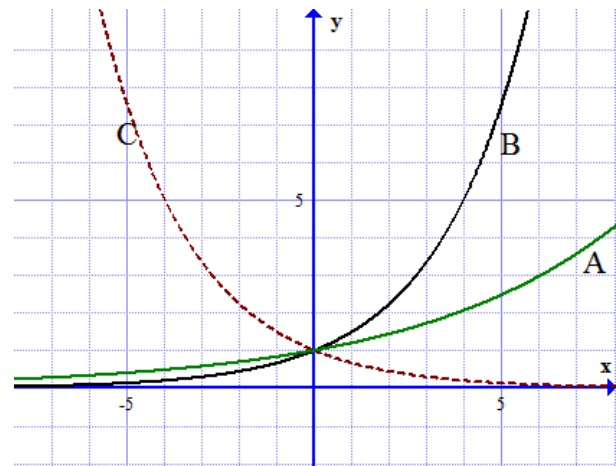
5. The graphs to the right represent the functions

$$A(x) = a^x$$

$$B(x) = b^x$$

$$C(x) = c^x$$

List the bases a , b , and c from least to greatest. Explain how why they must be in this order.



6. The bacteria *Escherichia coli* are commonly found in the human bladder. Suppose that 3000 of the bacteria are present at the time $t = 0$. Then t minutes later, the number of bacteria present can be approximated by

$$P(t) = 3000(2)^{t/20}$$

a. How many bacteria will be present after 10 minutes?

20 min?

30 min?

40 min?

60 min?

b. Sketch a *rough* graph of this function.

