Inverse of Exponentials (Assignment 42)

Find the inverse of each function. Then find the domain and range of both the function and the inverse.

1. $f(x) = 5^x - 3$

Domain($f$): Domain($f^{-1}$):

Range($f$): Range:($f^{-1}$):

2. $f(x) = \frac{1}{3}e^x$

Domain($f$): Domain($f^{-1}$):

Range($f$): Range:($f^{-1}$):

3. $f(x) = 5 - \log_2 x$

Domain($f$): Domain($f^{-1}$):

Range($f$): Range:($f^{-1}$):

4. $f(x) = \log(2x - 1)$

Domain($f$): Domain($f^{-1}$):

Range($f$): Range:($f^{-1}$):

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

Domain($f$): Domain($f^{-1}$):

Range($f$): Range:($f^{-1}$):

6. $f(x) = \ln(2 - x)$

Domain($f$): Domain($f^{-1}$):

Range($f$): Range:($f^{-1}$):

7. You've just invested $500 into the stock market. You're goal is to buy a 1987 Volvo 240DL that you saw on craigslist for $900. If your shares go up in value 7% each month, how long will you have to wait before you can afford the car?

8. A certain strain of bacteria splits itself in two once a day. How many would it take for one single bacterium to become 10,000 bacteria?

9. How long would it take for your savings account to double in value in each of the following bank accounts?

a) 6% interest compounded annually.

b) 15% interest compounded continuously.

c) 10% interest compounded monthly.

10. A dinosaur bone has just been found that appears to be older than any other bone previously discovered. It contains a 60 gram sample of thorium-24, only 0.2 grams of which are still radioactive. If the half-life of thorium-24 is 60 million years, how old is the bone?