Pg. 388-389

12.6

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36. $\log_5 \frac{1}{125} =$

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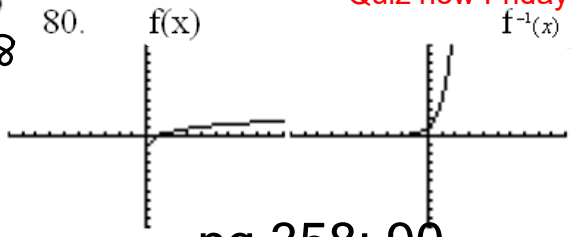

GHW#6 due tomorrow
Quiz now Friday not Thursday.

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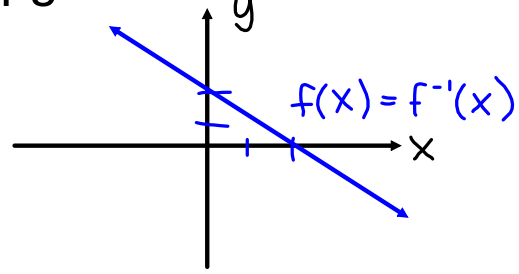


Nov 14-3:08 PM

https://www.youtube.com/watch?v=R0oUeLQIbIk

e - the exponential function

Nov 10-9:02 PM

You have \$1 to invest for 1 year. The Exponential Bank offers to pay 100% annual interest, compounded *n* times per year and rounded up to the nearest penny.

$$A = \left(1+\frac{1}{n}\right)^n$$

Interest is compounded	N =	$\left(1+\frac{1}{n}\right)^n =$
Annually	1	$(1+\frac{1}{1})^1 = 2$
Semiannually	2	$(1+\frac{1}{2})^2 = 2.25$
Quarterly	4	$(1+\frac{1}{4})^4 = 2.44$
Monthly	12	$(1+\frac{1}{12})^{12} = 2.61$
Daily	365	$(1+\frac{1}{365})^{365} = 2.71$
Hourly	8760	2.72
Every minute	525,600	2.72
Every second	31,536,000	2.72

∴ The more frequently we compound, the closer we get to ≈ 2.72

Nov 25-4:48 PM

The Number e

$2! = 2 \cdot 1$

$3! = 3 \cdot 2 \cdot 1$

e is a special irrational number

e is for Euler, named after Leonard Euler, who is credited for this.

$e = 1 + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} + \frac{1}{5!} + \frac{1}{6!} + \cdots$

$e \approx 2.718281828\ldots$

Using your calculator, find: e: 2nd ln or 2nd ÷

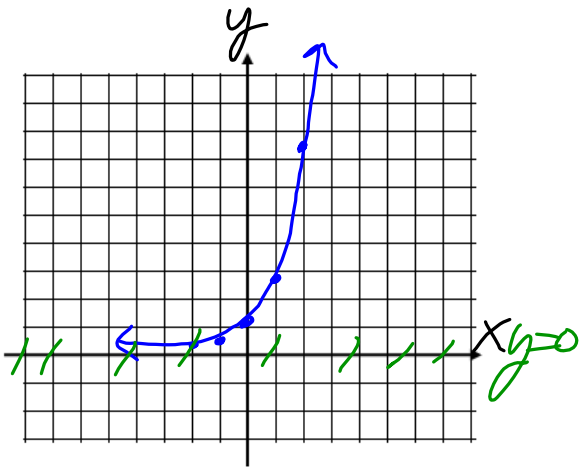
a. $e^{4.243} \approx 69.62$

b. $e^{2.143} \approx 8.52$

Nov 9-10:29 AM

Graph $y = e^x$

x	y
-2	.14
-1	.37
0	1
1	2.72
2	7.39



Nov 9-10:29 AM

(0,1)

Describe the transformation needed to transform $g(x) = e^x$ into the graph of the given function:

1. $f(x) = e^{x+2}$ (-2,1) Horizontal shift left 2

2. $f(x) = e^{-x} + 2$ reflect y-axis, Vert. shift up 2

3. $f(x) = e^{x-1} - 3$ right 1 down 3

4. $f(x) = 1 - e^x$ reflect x-axis vert. shift up 1

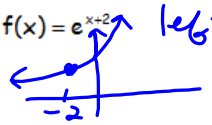
To graph any of the above, create a table of values using your calculator...

Nov 9-10:29 AM

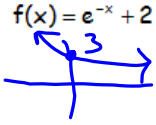
(a,1)

Describe the transformation needed to transform $g(x) = e^x$ into the graph of the given function:

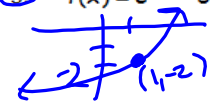
1. $f(x) = e^{x+2}$ left 2



2. $f(x) = e^{-x} + 2$ $-x$: r y-axis, $+2$: v. slight up 2



3. $f(x) = e^{x-1} - 3$ $x-1$ - right 1, -3: down 3



4. $f(x) = 1 - e^x$ $-$: r x-axis, 1: v. slight up 1

To graph any of the above, create a table of values using your calculator...

Nov 9-10:29 AM

If the population of the United States continues to grow as it has recently, then the approximate population of the United States (in millions) in year t will be given by the function:

$P(t) = 317e^{.0071t}$ where 2013 corresponds to $t = 0$.

Let t be the # years since 2013.

a. Estimate the population in 2020. $t = 2020 - 2013 = 7$

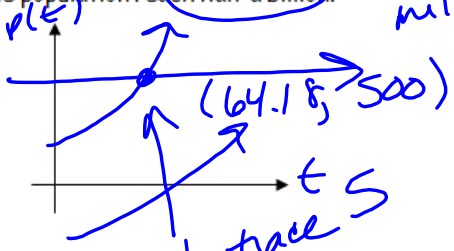
$P(7) = 317e^{.0071(7)} = 333.15$ million

b. Use your calculator to estimate when will the population reach half a billion. $= 500$ million

$Y_1 = 500$

$Y_2 = 317e^{.0071t}$

Xmin
Xmax
Ymin
Ymax



2013
64.18
2077.18

In the year 2077.

Nov 9-10:30 AM

Pg. 388-389

12.6

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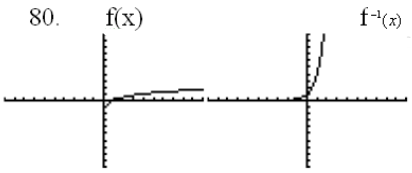

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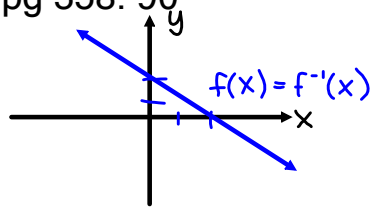
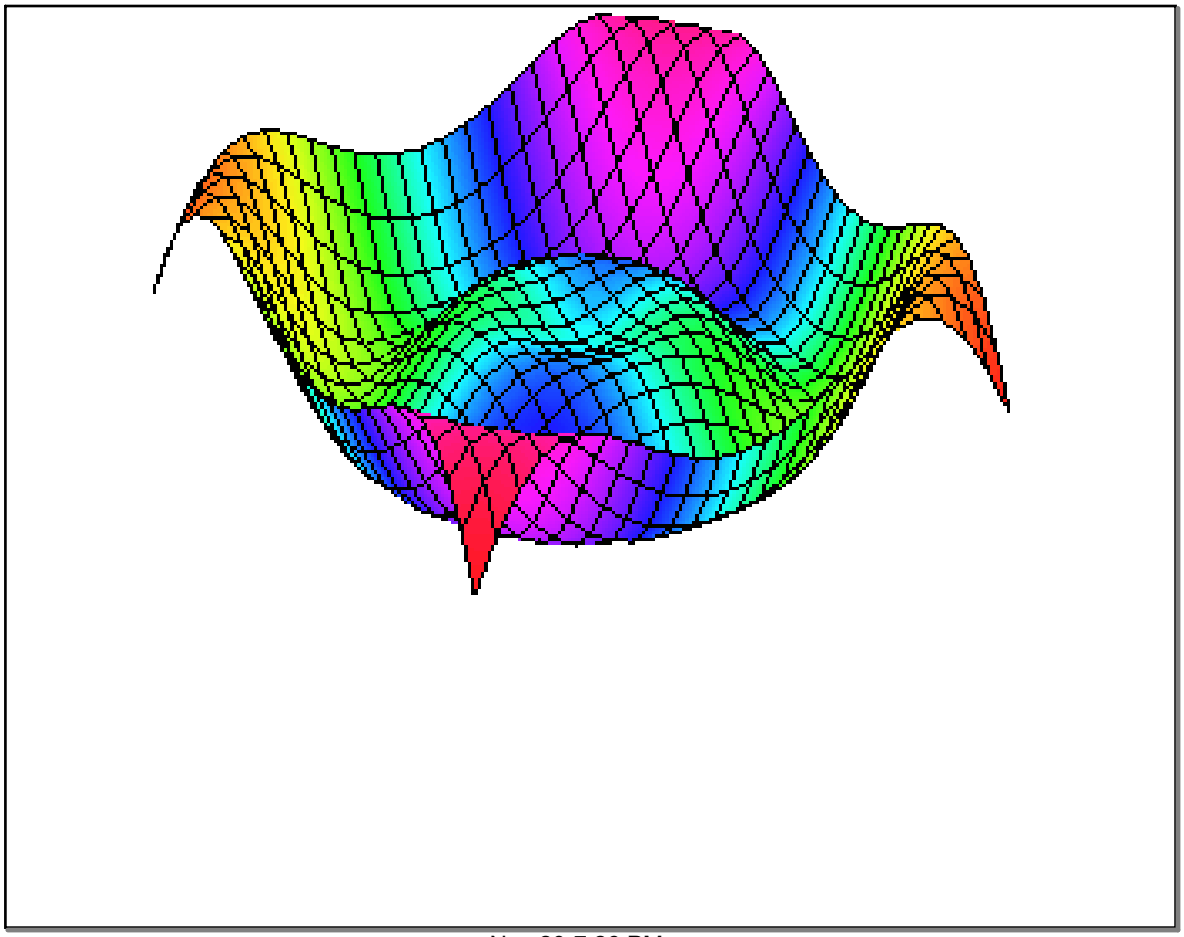
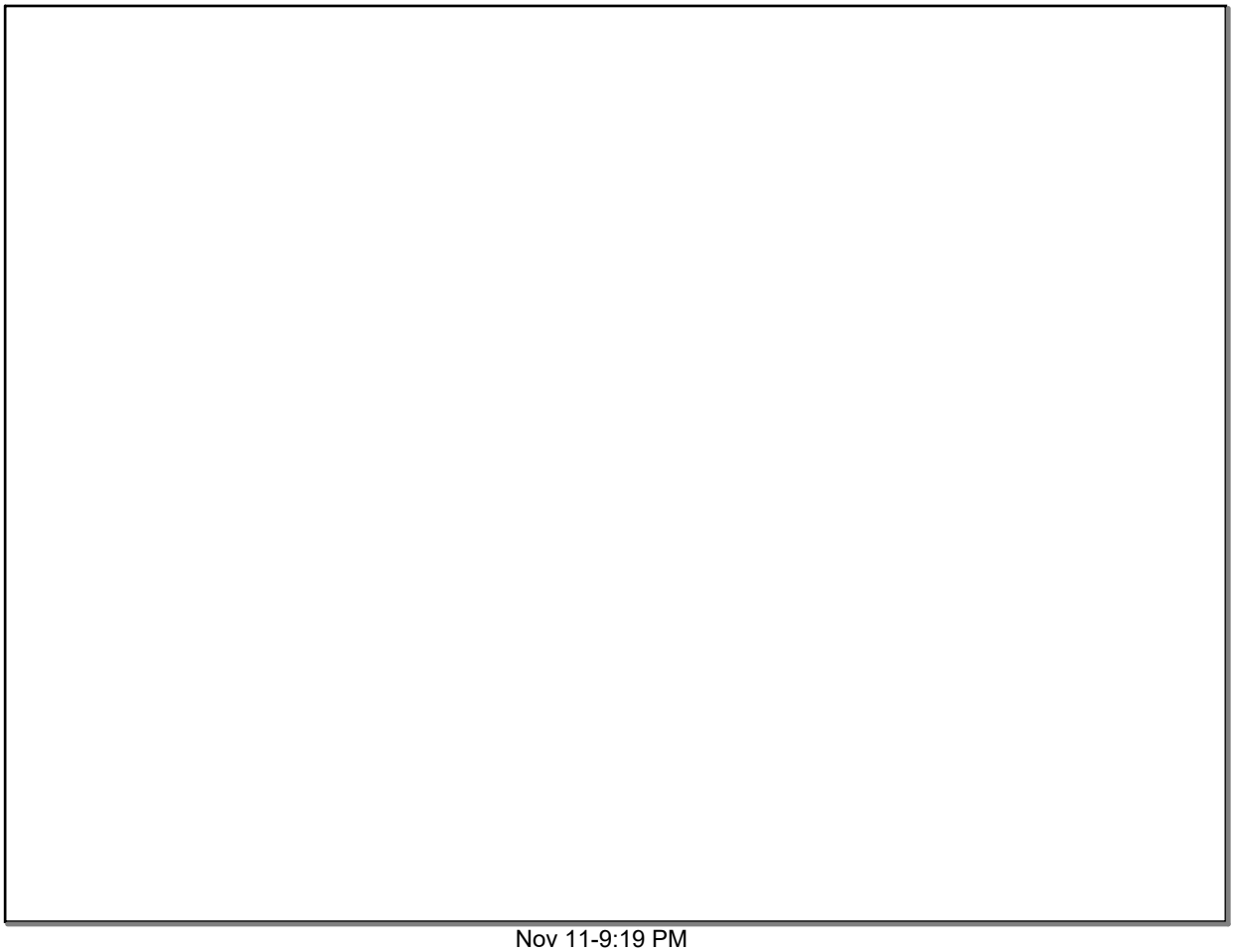


Nov 14-3:08 PM



Nov 20-7:26 PM



Nov 11-9:19 PM