

February 22, 2012 *Alg2*

Get out your homework...



$$9) \log_7 -3x + \log_7 5 = \log_7 21$$

$$\log_7 (-3x \cdot 5) = \log_7 21$$

$$\cancel{\log_7} \boxed{-15x} = \cancel{\log_7} \boxed{21}$$

$$\frac{-15x}{-15} = \frac{21}{-15}$$

$$x = \frac{7}{5}$$

Get out your notes!



~~Everyone needs a calculator~~

2/23 - The Natural Base e

To define e , we need to define *factorial* first.

$$\begin{aligned} 2! &= 2 \cdot 1 \\ &= 2 \end{aligned}$$

$$\begin{aligned} 3! &= 3 \cdot 2 \cdot 1 \\ &= 6 \end{aligned}$$

$$\begin{aligned} 4! &= 4 \cdot 3 \cdot 2 \cdot 1 \\ &= 24 \end{aligned}$$

$$\begin{aligned} 5! &= 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \\ &= 120 \end{aligned}$$

$$\begin{aligned} 10! &= 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \\ &= 3,628,800 \end{aligned}$$

$$1! = 1$$

$$0! = 1$$

Memoriz

The natural base e is defined as:

$$e = \frac{1}{0!} + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} + \frac{1}{5!} + \dots$$

$$= \frac{1}{1} + \frac{1}{1} + \frac{1}{2} + \frac{1}{6} + \frac{1}{24} + \frac{1}{120} + \dots$$

$$= 2.718281828459\dots$$

2.7

good enough for us

Simplify:

$$e^2 \cdot e^3 \\ = e^5$$

$$\frac{3e^2}{2e} \\ = 3e$$

$$(2e^{-1})^2 \\ = \left(\frac{2}{e}\right)^2 \\ = \frac{4}{e^2}$$

Evaluate using a calculator:

$$e^2 = 7.38905\dots$$

7.4

$$e^{-3} = .049787\dots$$

.05

$$e^{\frac{3}{4}} = 2.117000017\dots$$

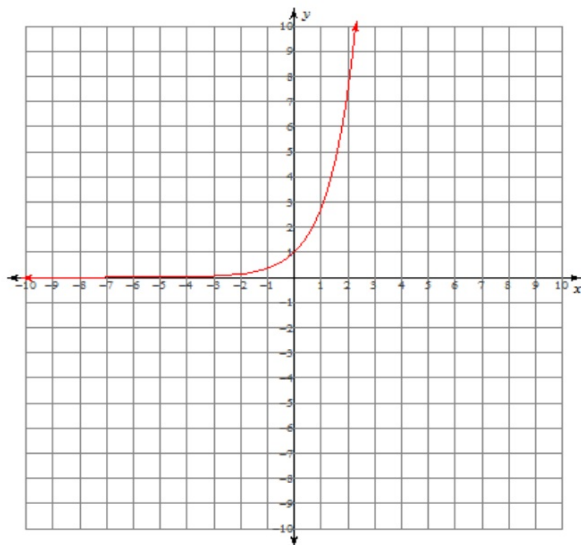
2.1

$$e^{-\frac{1}{3}} = .7165313\dots$$

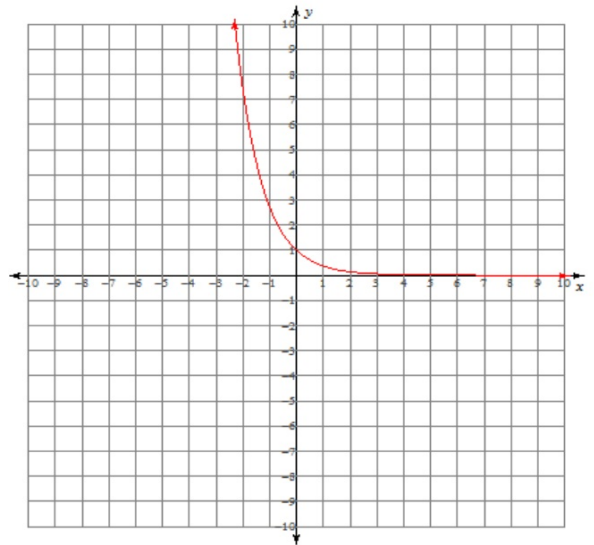
.72

Graph each:

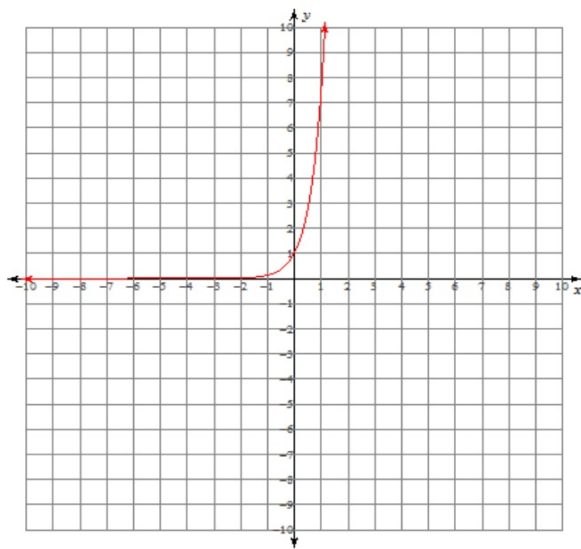
$$f(x) = e^x$$



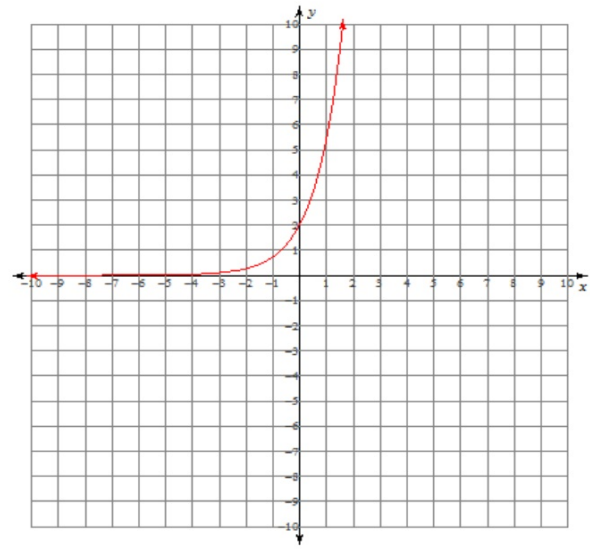
$$f(x) = e^{-x}$$



$$f(x) = e^{2x}$$



$$f(x) = 2e^x$$



Homework

Pg 423 #5-24, 33-36 all

Due Monday
