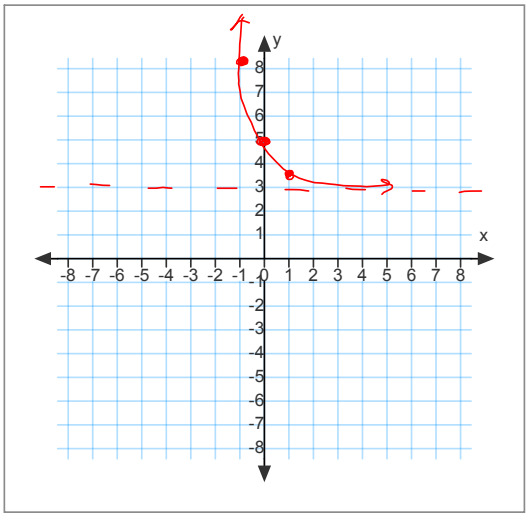
Warm up

1. Sketch by hand. $f(x) = 2e^{-x} + 3$



x	y
-1	$\frac{1}{e}$
0	1
1	e

x	y
1	$2\frac{1}{3}$
0	2
-1	5.4

2. Expand.

a. $\log_5\left(\frac{(3x+1)^2}{y^4z^3}\right)$ $2\log_5(3x+1) - (4\log_5 y + 3\log_5 z)$

b. $\ln\left(3\sqrt{x}y^3z^7\right)$ $\ln 3 + \frac{1}{2}\ln x + 3\ln y + 7\ln z$

3. Condense.

$\log_2 9 - 4\log_2 x - \log_2(x+1)$ $\log_2\frac{9}{x^4(x+1)}$ $\log_2 9 - (4\log_2 x + \log_2(x+1))$

4. Evaluate

a. $\log_2 6 - \log_2 3$ $\log_2 2 = 1$

b. $\log_3 9 + \log_4 16 - \log 10$

$2 + 2 - 1$

3

GO COUGARS!

Homework Questions

(61) $e^{2x} - 4e^x - 5 = 0$

$(e^x - 5)(e^x + 1) = 0$

$e^x = 5 \quad e^x = -1$

$\ln 5 = x \quad$ N.S.

(23) $\left(\frac{2}{3}\right)^x = \frac{81}{16}$

$\log_{\frac{2}{3}} \frac{81}{16} = x$

$x = -4$

(67) $e^{-x^2-3x} = e^{x-2}$

$-x^2 - 3x = x - 2$

$0 = x^2 + 4x - 2$

3.4 Day 2 - Solving Logarithmic Equations

Solve

$\ln x = 2$

$e^2 = x$

$x = 7.389$

$\log x = 4$

$10^4 = x$

$x = 10{,}000$

$\ln 5x = 3$

$e^3 = 5x$

$\frac{e^3}{5} = x$

$x = 4.017$

$\log_3(3x-2)=2$

$3^2=3x-2$

$9=3x-2$

$11=3x$

$x=\frac{11}{3}$

$\log_2(x-1)=\log_2(3x+4)$

$x-1=3x+4$

$-5=2x$

$x=-\frac{5}{2}$

No Solution

$\ln(x+4)=5$

$e^5 = x+4$

$x = e^5 - 4$

$x = 144.413$

$3+2\ln 4x=5$

$2\ln 4x = 2$

$\ln 4x = 1$

$e^1 = 4x$

$x = \frac{e}{4}$

$\ln(x-2)+\ln(2x-3)=2\ln x$

$\ln(x-2)(2x-3)=2\ln x$

$\ln(2x^2-7x+6)=\ln x^2$

$2x^2-7x+6=x^2$

$x^2-7x+6=0$

$(x-6)(x-1)=0$

$x=6,\cancel{1}$

$\log x+\log(x+15)=2$

$\log(x^2+15x)=2$

$10^2=x^2+15x$

$0=x^2+15x-100$

$0=(x-5)(x+20)$

$x=5,\cancel{-20}$

$$2x = \ln(x+2)$$

$$e^{2x} = x+2$$

Find x-intercepts, domain, VA, sketch problems

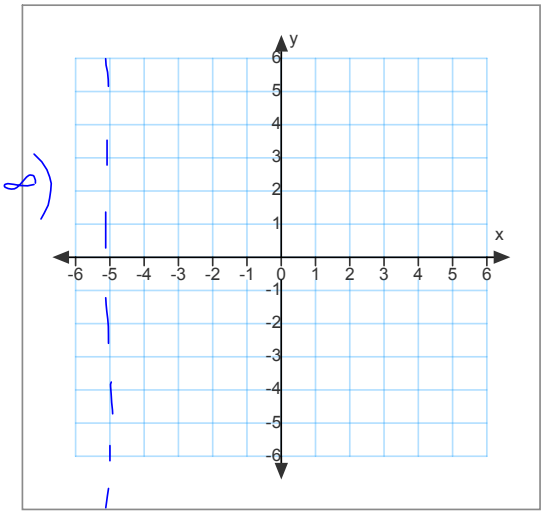
$f(x) = \log_4(x+5)$

$0 = \log_4(x+5)$

$4^0 = x+5$

$1 = x+5 \quad x = -4$

D: $(-5, \infty)$



$y = -4\log_3(3x+2)$

HOMEWORK

p 221 7, 15, 29-37 odd, 85-103 odd,
111-113 all, 123-127 odd,
p 203 48-52 even, 71, 73