① $y = 5 - \log_2(x+1)$

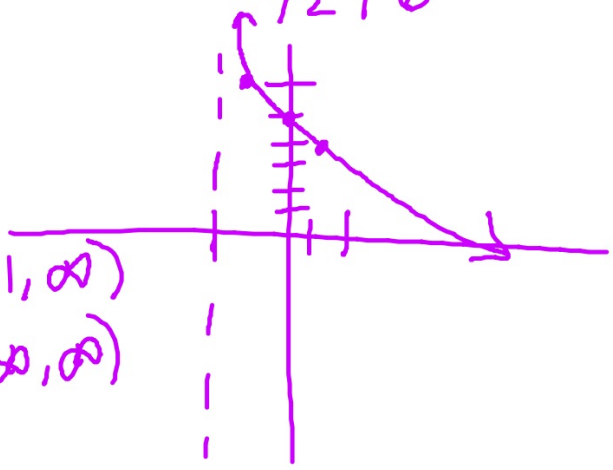
$y - 5 = -\log_2(x+1)$

$-y+5 = \log_2(x+1)$

$2^{-y+5} = x+1$

$2^{-y+5} - 1 = x$

x	y
1	4
0	5
$-1/2$	6



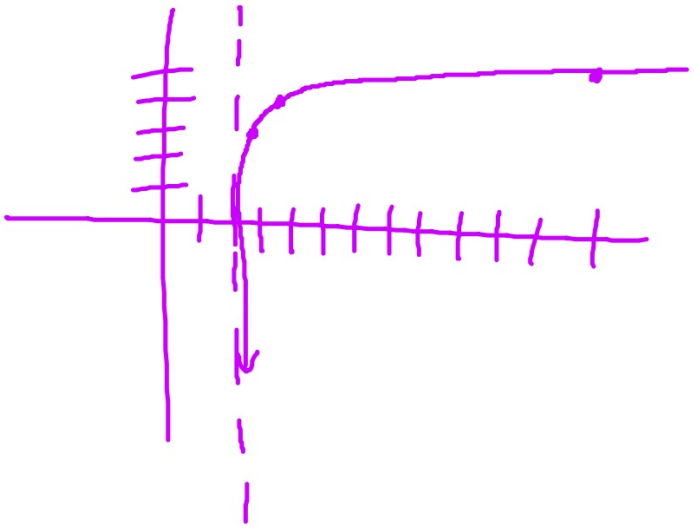
D: $(-1, \infty)$

R: $(-\infty, \infty)$

③ $y = \log_{10}(x-2)+4$

$10^{y-4}+2 = x$

x	y
$2\frac{1}{10}$	3
3	4
12	5

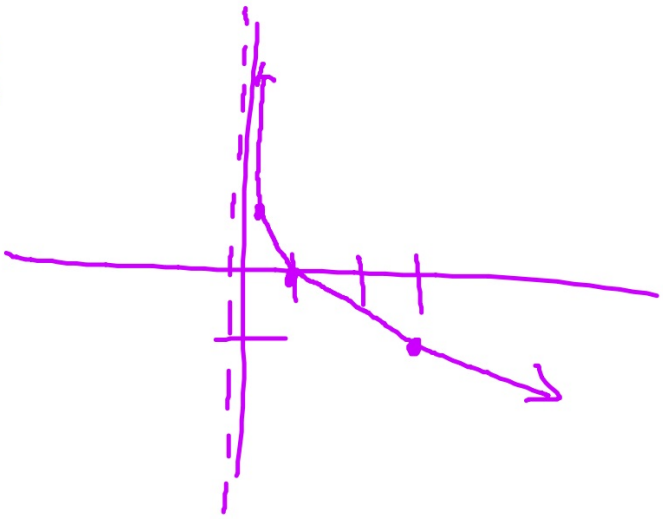


(47) $y = \log_{\frac{1}{3}} x$

$\frac{1}{3}$ $\frac{1}{3}$

$\left(\frac{1}{3}\right)^y = x$

x	y
3	-1
1	0
1/3	1

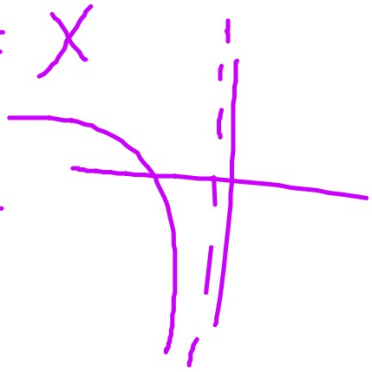


② $y = \log_3(-x)$

$3^y = -x$

$-3^y = x$

x	y
$-1/3$	-1
-1	0
-3	1



④ $y = \ln x - 5$

$y + 5 = \ln x$

$e^{y+5} = e^{\ln x}$

$e^{y+5} = x$

x	y
	-4
	-5
	-6

Interest Word Problems

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

P: principal balance
A: Accumulated balance
r: interest rate (decimal)
n: # times compounded
t: time

Annually	n = 1
semiannually	n = 2
quarterly	n = 4
monthly	n = 12
bi-monthly	n = 24
bi-weekly	n = 26
weekly	n = 52
daily	n = 365

Compounding n times per year

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

$A = 7{,}300\left(1 + \frac{.07}{2}\right)^{6}$

$A = \$8973.56$

(3) $A = 21000\left(1 + \frac{.136}{12}\right)^{48}$

$= \$36070.05$

Compounding Continuously

$$A = Pe^{rt}$$

(2) $A = 7300e^{.07 \times 3}$

$= 7300e^{.21}$

$= \$9005.85$

(8) $3000 = 1500\left(1 + \frac{.06}{4}\right)^{4t}$

$2 = \left(1 + \frac{.06}{4}\right)^{4t}$

$2 = (1.015)^{4t}$

$\log 2 = \log(1.015)^{4t}$

$\log 2 = 4t \log(1.015)$

$\frac{\log 2}{4 \log 1.015} = t = 11.639$ years

(9) $3000 = 1500e^{.06t}$

$2 = e^{.06t}$

$\ln 2 = \ln e^{.06t}$

$\ln 2 = .06t$

$\frac{\ln 2}{.06} = t$

$11.552 = t$ years

(7) $4000 = 3500\left(1 + \frac{.0525}{4}\right)^{4t}$

$\frac{8}{7} = (\text{store 1})^{4t}$

$\log \frac{8}{7} = \log(\text{store 1})^{4t}$

$\frac{\log \frac{8}{7}}{4\log(\text{store 1})} = t$

$= 2.56$ years

(5) $A = 2500\left(1 + \frac{.0525}{12}\right)^{48}$

$A = \$3082.78$

Interest: 3082.78
− 2500.00
$582.78

$$3^{2x} - 3^{x} - 42 = 0$$

$$(3^{x} - 7)(3^{x} + 6) = 0$$

$3^{x} - 7 = 0$

$\log_3 3^{x} = \log_3 7$

$x = \log_3 7$

1.771

$3^{x} + 6 = 0$

~~$3^{x} = -6$~~