

Precalc
Graphing Natural Logs

Graph the function below and supply all the work asked for.

$$y = 2\ln(x+1) - e$$

Parent: ln(x)

Multiplier: 2 ln(x) mult y's by 2

Shift: 2 ln(x+1) - e left 1, down e

X - int: (2.893, 0)

Y - int: (0, -2.718)

Asymptote: x = -1

x-int

$$0 = 2\ln(x+1) - e$$

$$\ln(x+1) = e/2$$

$$e^{e/2} = x+1$$

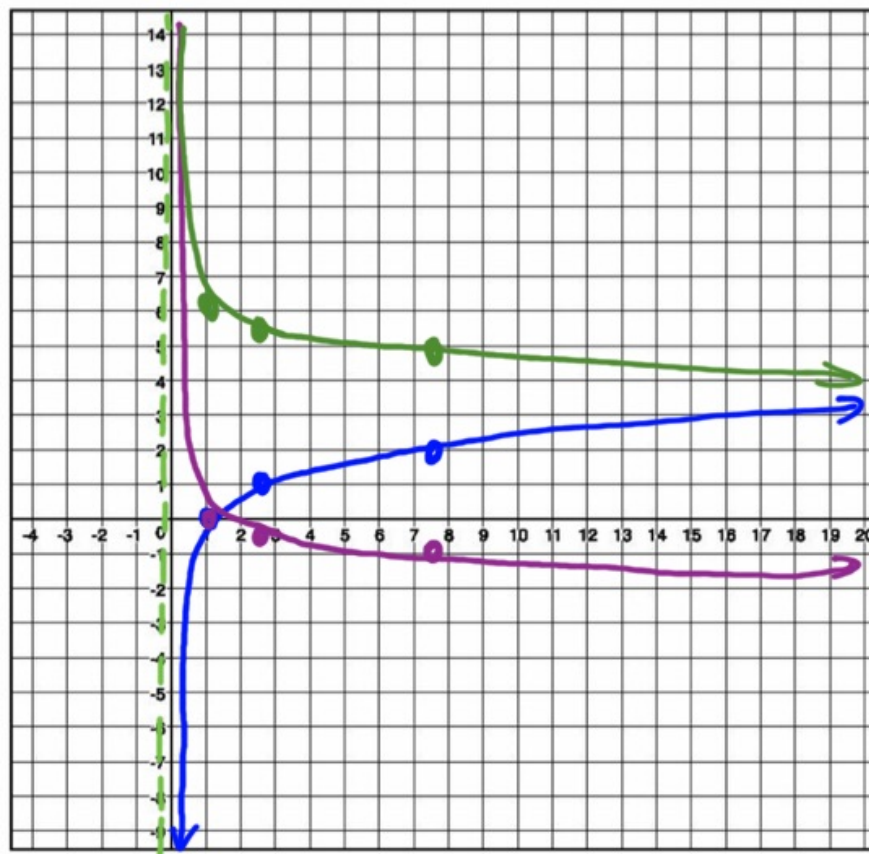
$$x = e^{e/2} - 1 \approx 2.893$$

y-int

$$y = 2\ln(0+1) - e$$

$$y = 2\ln(1) - e$$

$$y = -e$$



Graph the function below and supply all the work asked for.

$$y = -\frac{1}{2} \ln(x) + 6$$

Parent:  $\ln(x)$

Multiplier:  $-\frac{1}{2} \ln(x)$  multy y's by  $-\frac{1}{2}$

Shift:  $-\frac{1}{2} \ln(x) + 6$  up 6

X - int:  $(162754.791, 0)$

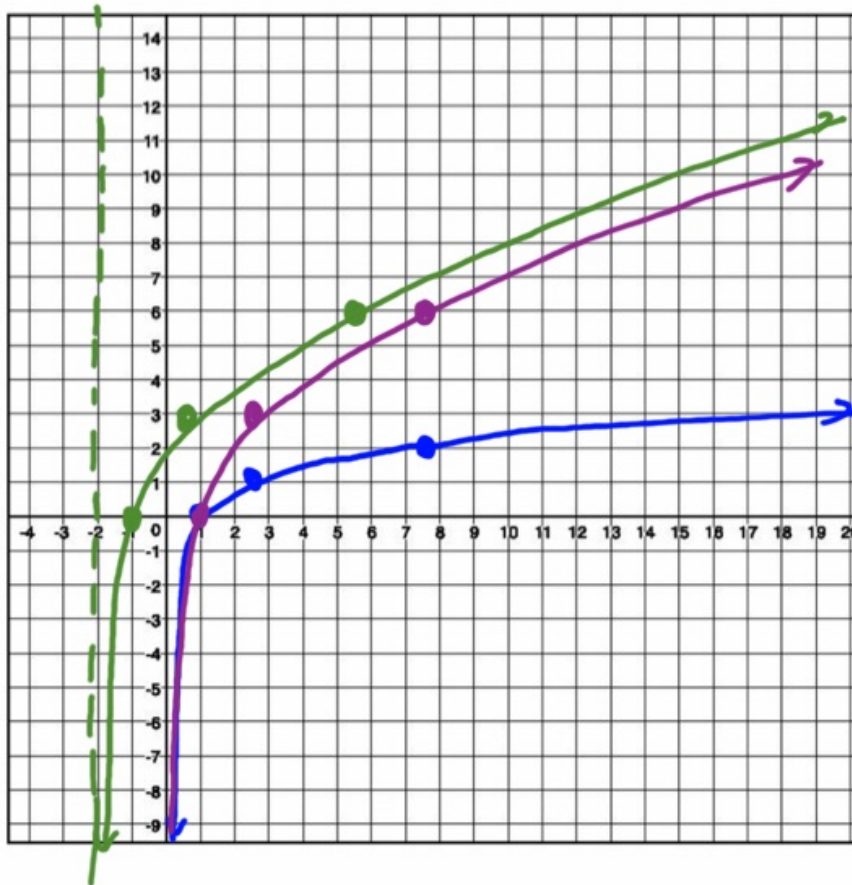
Y - int: None

Asymptote:  $x = 1$

x-int  
 $0 = -\frac{1}{2} \ln(x) + 6$

$\ln(x) = 12$   
 $x = e^{12} \approx 162754.791$

x-int  
 $y = -\frac{1}{2} \ln(0) + 6$   
 $\uparrow$   
 $\ddots$   
 no y-int



Graph the function below and supply all the work asked for.

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

Parent: ln(x)

Multiplier: 3ln(x) mult y's by 3

Shift: 3ln(x+2) 2 left

X - int: (-1, 0)

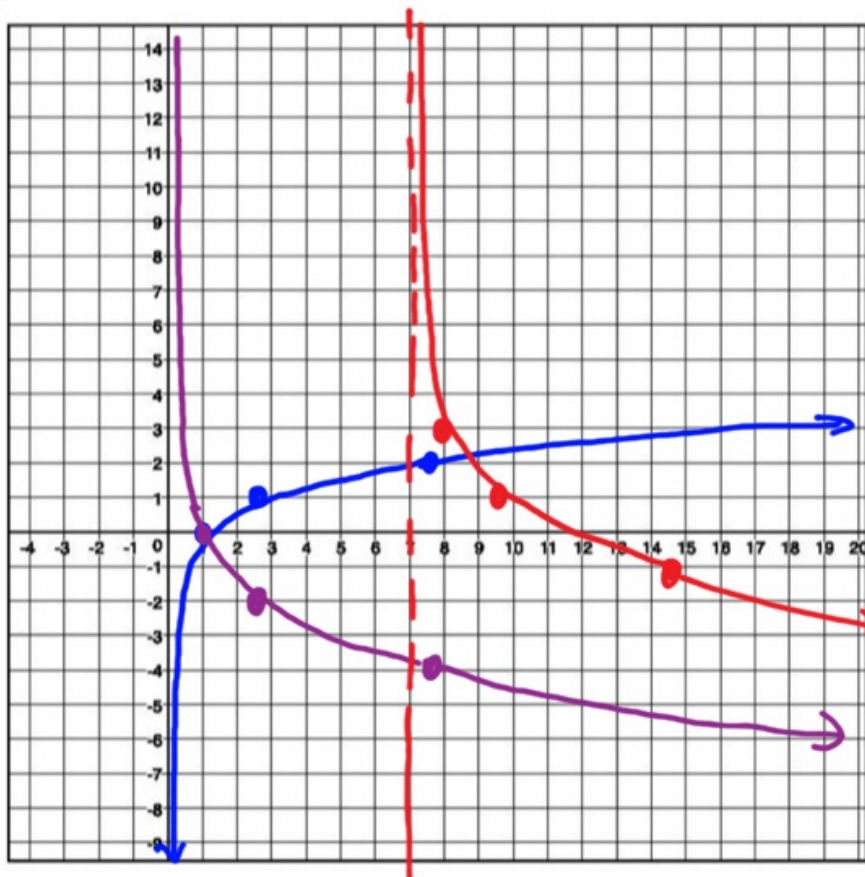
Y - int: (0, 2.079)

Asymptote: x = -2

x-int  
 $0 = 3\ln(x+2)$   
 $\ln(x+2) = 0$

$e^0 = x+2$   
 $x = -1$

y-int  
 $y = 3\ln(0+2)$   
 $y \approx 2.079$



Graph the function below and supply all the work asked for.

$$y = -2\ln(x-7) + 3$$

Parent:  $\ln(x)$

Multiplier:  $-2\ln(x)$  mult y's by -2

Shift:  $-2\ln(x-7)+3$  right 7, up 3

X - int:  $(11.482, 0)$

Y - int: None

Asymptote:  $x=7$

x-int  
 $0 = -2\ln(x-7) + 3$

$$\ln(x-7) = 1.5$$

$$e^{\quad} \quad \curvearrowright$$

$$x-7 = e^{1.5}$$

$$x = e^{1.5} + 7 \approx 11.482$$

y-int  
 $y = -2\ln(0-7) + 3$   
 $y = -2\ln(-7) + 3$   
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