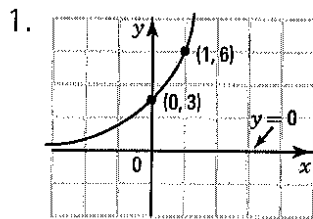Activity 8

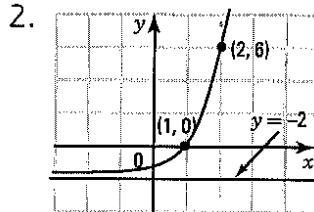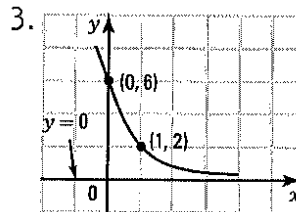**d)** Find the rule of the following exponential functions knowing the asymptote and two points on the graph.
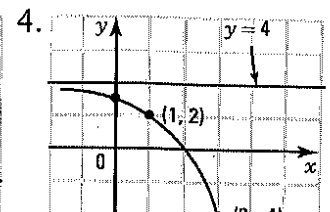
1.

$y = 3(2)^x$

2.

$y = \frac{1}{2}(4)^x - 2$

3.

$y = 6\left(\frac{1}{3}\right)^x$

4.

$y = -2^x + 4$

31. Find the rule of the following exponential functions knowing the asymptote and two points, A and B, on the graph.

a) Asymptote: $y = 0$
A(1, 6); B(2, 18)
$y = 2(3)^x$

b) Asymptote: $y = 0$
A(1, –10); B(2, –50)
$y = -2(5)^x$

c) Asymptote: $y = 2$
A(0, 1); B(1, –2)
$y = -4^x + 2$

d) Asymptote: $y = -10$
A(1, –4); B(2, 8)
$y = 2(3)^x - 10$

32. A ping pong table is 70 cm high. A ball is dropped from above the table. The height reached by the ball relative to the floor is 100 cm on the first bounce and 88 cm on the second bounce.

a) Find the rule of the exponential function that gives the height y of the ball as a function of the number x of bounces.

x	1	2
y (cm)	100	88

$y = ac^x + 70;\ y = 50(0.60)^x + 70$

b) Calculate, to the nearest tenth of cm, the height reached by the ball on the 6th bounce.

72.3 cm