Classwork: Regents exponent problems
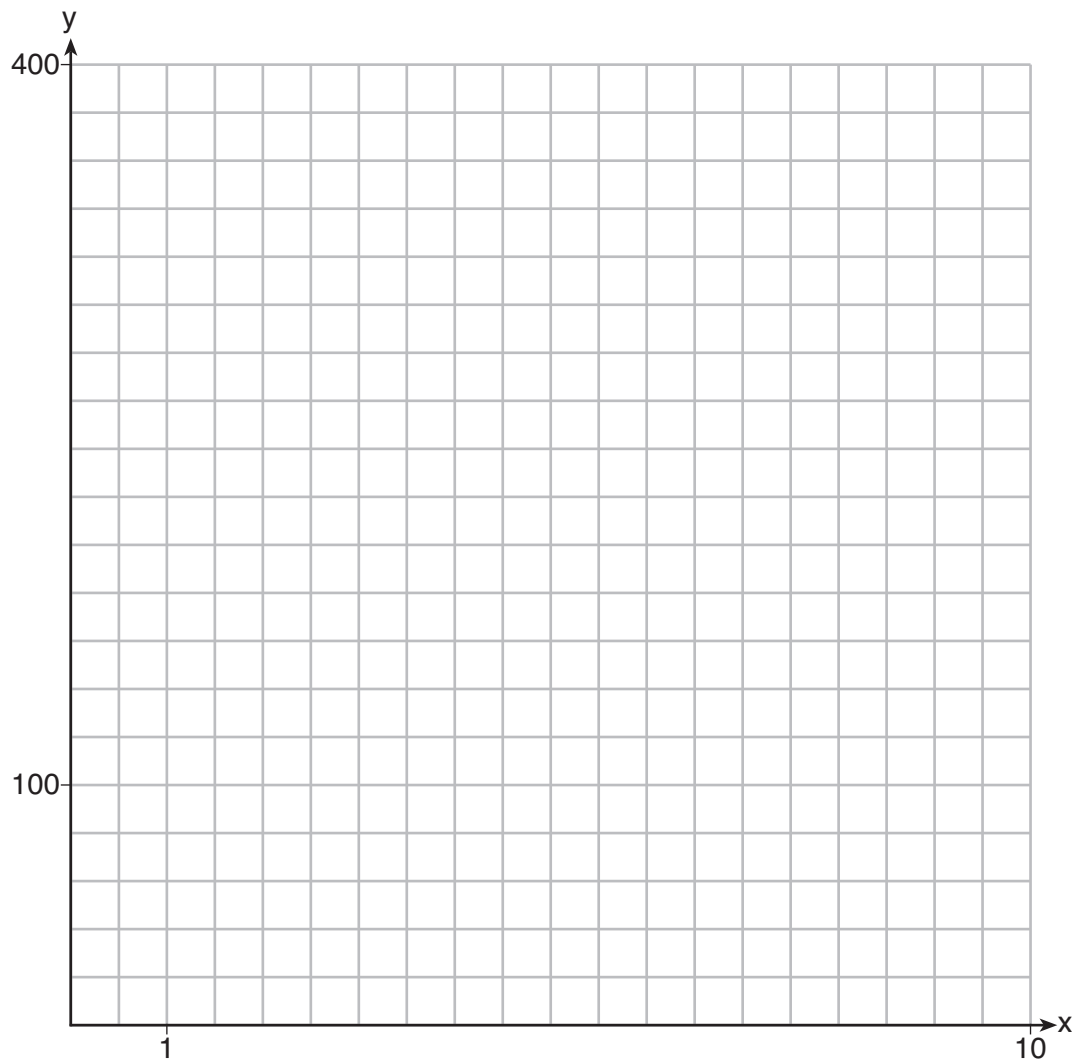
1.

Graph $y = 400(.85)^{2x} - 6$ on the set of axes below.

2.

Using the formula below, determine the monthly payment on a 5-year car loan with a monthly percentage rate of 0.625% for a car with an original cost of $21,000 and a $1000 down payment, to the *nearest cent*.

$$P_n = PMT \left(\frac{1 - (1 + i)^{-n}}{i} \right)$$

P_n = present amount borrowed

n = number of monthly pay periods

PMT = monthly payment

i = interest rate per month

The affordable monthly payment is $300 for the same time period. Determine an appropriate down payment, to the *nearest dollar*.

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**3.**

Jim is looking to buy a vacation home for \$172,600 near his favorite southern beach. The formula

to compute a mortgage payment, M, is $M = P \cdot \dfrac{r(1 + r)^N}{(1 + r)^N - 1}$ where P is the principal amount of the

loan, r is the monthly interest rate, and N is the number of monthly payments. Jim's bank offers a

monthly interest rate of 0.305% for a 15-year mortgage.

With no down payment, determine Jim's mortgage payment, rounded to the *nearest dollar*.

Algebraically determine and state the down payment, rounded to the *nearest dollar*, that Jim needs
to make in order for his mortgage payment to be \$1100.

4.

Graph $y = \log_2(x + 3) - 5$ on the set of axes below. Use an appropriate scale to include *both* intercepts.
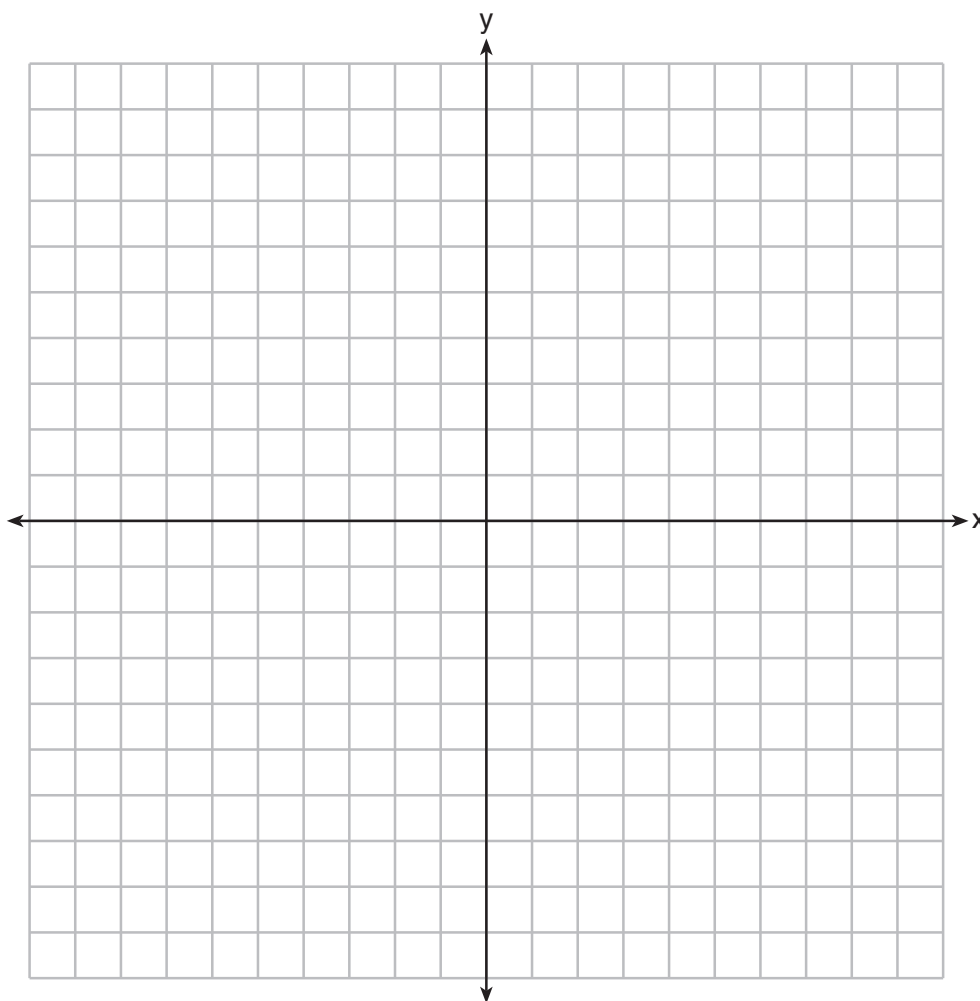
Describe the behavior of the given function as x approaches -3 and as x approaches positive infinity.