

SCORE: _____ / 35 POINTS

NON-GRAPHING CALCULATORS ONLY

Let $f(x) = 2\log_4(5x + 15)$.

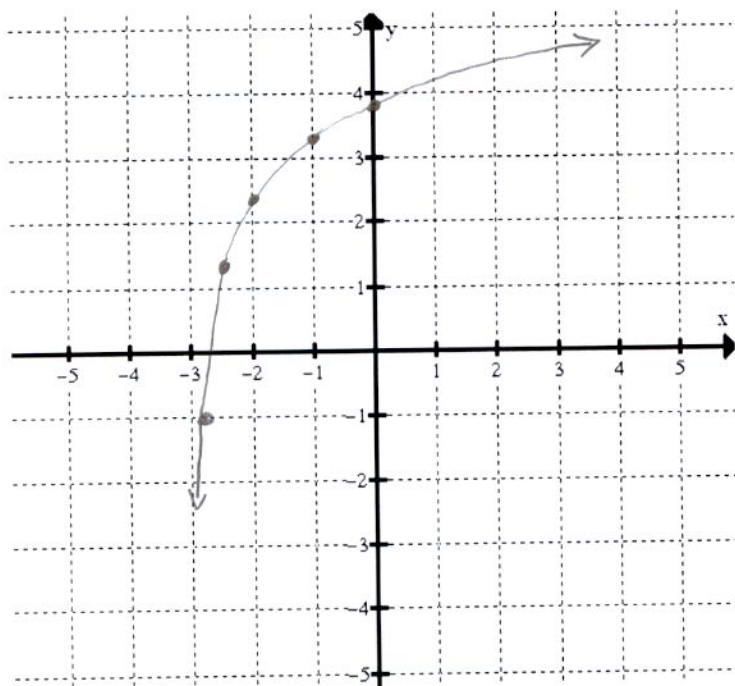
SCORE: ____ / 12 POINTS

- [a] What is the equation of the vertical asymptote of the graph of $f(x)$? $x = -3$
 $5x + 15 = 0$
 $x = -3$

- [b] Fill in the following table of values.
 Choose your values of x based on your answer to [a] and the guidelines given in the graphing handout.
Round your answers to 1 decimal place.

Value of x →	-2.9	-2.1	-2	-1	0
Value of $f(x)$ →	-1	1.3	2.3	3.3	3.9

- [c] Plot the points from [b] on the grid below, and draw the graph of $f(x)$.



PUT A BOX AROUND EACH FINAL ANSWER

Find the intensity of an earthquake with Richter magnitude 5.5. SHOW PROPER WORK.
Round your answer to the nearest whole number.

SCORE: ____ / 4 POINTS

$$5.5 = \log I$$

$$10^{5.5} = I$$

$$I \approx 316,228$$

If you deposit \$9300 into an account that pays 3.65% interest annually,
after how many years will the value of the account be \$12800 ? Round your answer to 2 decimal places. SHOW PROPER WORK.

SCORE: ___ / 9 POINTS

$$12,800 = 9,300 (1 + 0.0365)^t$$

$$\frac{128}{93} = 1.0365^t$$

$$\log \frac{128}{93} = \log 1.0365^t$$

$$\log \frac{128}{93} = t \log 1.0365$$

$$t = \frac{\log \frac{128}{93}}{\log 1.0365} \approx 8.91 \text{ YEARS}$$

Find the exact solution of $7^{2x-3} = 5^{4x-7}$. SHOW PROPER WORK. NO CREDIT FOR GUESS & CHECK. SCORE: ___ / 10 POINTS
Also, use your calculator to find the decimal approximation of your exact solution, rounded to 4 decimal places.

$$\log 7^{2x-3} = \log 5^{4x-7}$$

$$(2x-3)\log 7 = (4x-7)\log 5$$

$$2x\log 7 - 3\log 7 = 4x\log 5 - 7\log 5$$

$$2x\log 7 - 4x\log 5 = 3\log 7 - 7\log 5$$

$$x(2\log 7 - 4\log 5) = 3\log 7 - 7\log 5$$

$$x = \frac{3\log 7 - 7\log 5}{2\log 7 - 4\log 5} \approx 2.1322$$