

4. [15 points] In the following problems, circle all of the statements that *could* be true and draw a line through all of the statements that *could not* be true, based on the given information. (Every statement should be either circled or crossed out.) No explanation is necessary.

a. [3 points] A brief table of values for $f(x)$ and $g(x)$ is given, rounded to 4 decimal places:

x	$f(x)$	$g(x)$
1.25	2.4414	1.1265
1.5	5.0625	1.1547
1.75	9.3789	1.1836

- $f(x)$ is exponential and $g(x)$ is a power function.
- $f(x)$ is a power function and $g(x)$ is exponential.
- $f(x)$ and $g(x)$ are both exponential.

Solution:

F, T, F

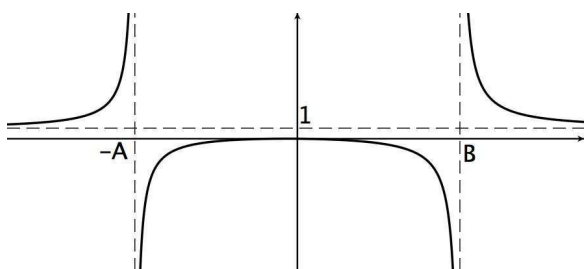
b. [4 points] Suppose that $f(x)$ is a continuous function and $\lim_{x \rightarrow \infty} f(x) = 2$.

- For all $x > 10$, $f''(x) > 0$ and $f'(x) > 0$.
- For all $x > 10$, $f''(x) > 0$ and $f'(x) < 0$.
- For all $x > 10$, $f''(x) < 0$ and $f'(x) > 0$.
- For all $x > 10$, $f''(x) < 0$ and $f'(x) < 0$.

Solution:

F, T, T, F

c. [4 points] A rational function $r(x)$ is graphed below (with $A \neq B$):

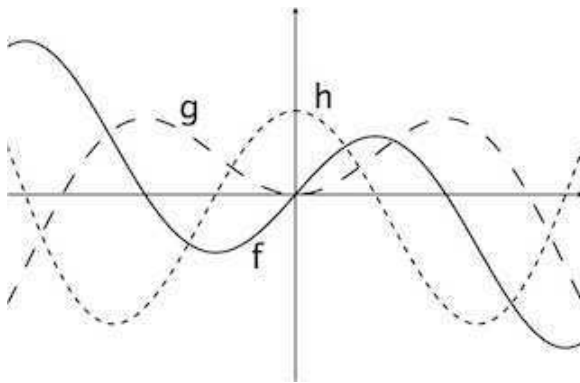


- $r(x) = \frac{x^2}{(x+A)(x-B)}$
- $r(x) = \frac{x}{(x+A)(x-B)}$
- $r(x) = \frac{4x^2}{(x+A)(x-B)}$
- $r(x) = \frac{x^2}{(x-A)(x+B)}$

Solution:

T,F,F,F

d. [4 points] Consider the functions $f(x)$, $g(x)$, and $h(x)$ graphed below.



- $f(x) = h'(x)$
- $h(x) = f'(x)$
- $h(x) = g''(x)$
- $f(x) = g'(x)$

Solution:

F, T, T, T