Practice Problem 1

The graph of function g has a vertical asymptote at x = -2. Which of the following expressions could define $g(x)$?

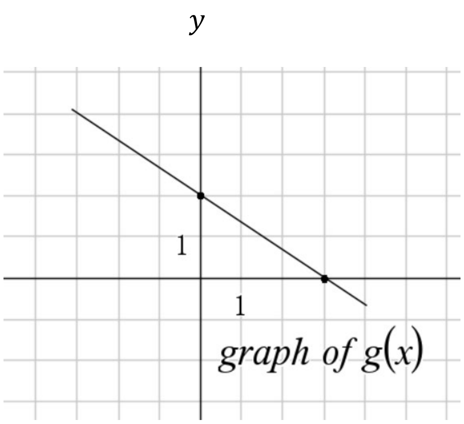
(a) $\frac{(x+2)^4(x-5)^3}{(x+2)^4(5-x)^2}$

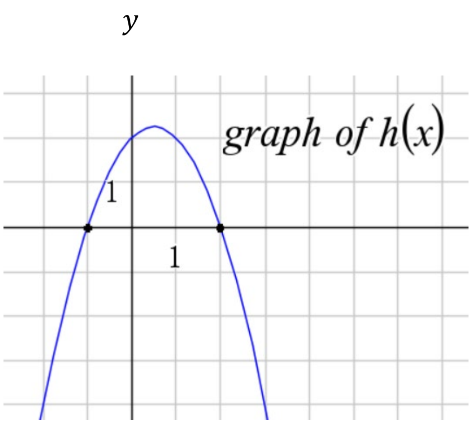
(b) $\frac{(x+2)^5(x-5)^2}{(x+2)^4(5-x)^3}$

(c) $\frac{(x+2)^4(x-5)^2}{(x+2)^5(5-x)^2}$

(d) $\frac{(x+2)^5(x-5)^3}{(x+2)^5(5-x)^3}$

Practice Problem 2





The graphs of the polynomial functions g and h are shown. The function $k(x)$ is defined by $k(x) = \frac{g(x)}{h(x)}$. What are the vertical asymptotes of the graph $y = k(x)$?

(a) $x = -1$ *and* $x = 2$ *only*

(b) $x = -1$ *only*

(c) $x = 2$ *only*

(d) $x = 3$ *only*

Practice Problem 1 Solution:

(c) $\frac{(x+2)^4(x-5)^2}{(x+2)^5(5-x)^2}$

When the common factor of (x + 2) is reduced from the numerator and the denominator, there is a remaining (x + 2) in the denominator resulting in a vertical asymptote at x = -2.

Practice Problem 2 Solution:

(a) $x = -1 \; and \; x = 2 \; only$

The function $y = k(x)$ is undefined when $h(x) = 0$, this happens at $x = -1 \; and \; x = 2$. Since there are no common zeros in the numerator (where $g(x) = 0$), there are no holes, only vertical asymptotes.

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