

① If $g(f(x)) = -2x^2 - 4x + 1$, which of the following would work?

(a) $g(x) = x - 3$
 $f(x) = -2x^2 + x$

(b) $g(x) = -2x^2 + 3$
 $f(x) = x + 1$

(c) $g(x) = x + 1$
 $f(x) = -2x^2 + 3$

② $f(x) = |5x|$ $g(x) = -\frac{6}{x}$ $a(x) = 2x + 1$ $b(x) = x^2 - 4$

* Must use at least two functions

(a) Find $c(x)$, given $c(x)$ has a vertical asymptote at $x = 2$.

$$g(b(x))$$

(b) Find $d(x)$, given $d(x)$ has end behavior $x \rightarrow \infty$ $f(x) \rightarrow 1$
 $x \rightarrow -\infty$ $f(x) \rightarrow 1$

$$a(g(x))$$

(c) Find $e(x)$, given $e(x)$ has a range $[-7, \infty)$.

$$a(b(x))$$

(d) Find $h(x)$, given $h(x)$ has no roots.

$$g(f(x)) \quad [g(\text{anything})]$$

(e) Find $m(x)$, given $m(x)$ has a y-intercept at -6 .

$$g(a(x))$$