

2.1-2.5 Extra Practice Problems

1. $f(x) = x^2 + 3$, $g(x) = 2\sqrt{4 - 2x}$, $m(x) = \frac{5}{x+3}$, $n(x) = 3x + 7$, $p(x) = 5 - 2x$

For each of the following find the domain and simplify.

a) $h(x) = g(n(x))$ b) $h(x) = f(g(x))$ c) $h(x) = m(m(x))$ d) $h(x) = \frac{g(x)}{h(p(x))}$

2. For $f(x) = \frac{2}{5} - \frac{1}{5} \ln\left(1 + \frac{2}{7}x\right) + \frac{2}{3}$

(a) Write $f(x)$ in standard transformation form.

(b) Find the **simplified, exact value** of the y -intercept. Show the work that leads to your answer.

(c) Sketch $f(x)$ showing the basic shape, y -intercept, and any/all asymptotes.

(d) Find D_f :

(e) Find R_f :

(f) Find the **Equation(s)** of any/all asymptotes. Be sure to label which type they are.

(g) Find $\lim_{x \rightarrow \infty} f(x)$

(h) Find the $\lim_{x \rightarrow -\infty} f(x)$

3. $f(x) = \frac{8}{3x-13} + \frac{7}{5}$

(a) Write $f(x)$ in standard transformation form.

(b) Find the **simplified, exact value** of the y -intercept. Show the work that leads to your answer.

(c) Sketch $f(x)$ showing the basic shape, y -intercept, and any/all asymptotes.

(d) Find D_f :

(e) Find R_f :

(f) Find the **Equation(s)** of any/all asymptotes. Be sure to label which type they are.

(g) Find $\lim_{x \rightarrow \infty} f(x)$

(h) Find the $\lim_{x \rightarrow -\infty} f(x)$

4. For $f(x) = \frac{9}{4} - \frac{1}{5}e^{\frac{2}{5}x + \frac{2}{3}}$

(a) Write $f(x)$ in standard transformation form.

(b) Find the **simplified, exact value** of the of the y -intercept. Show the work that leads to your answer.

(c) Sketch $f(x)$ showing the basic shape, y -intercept, and any/all asymptotes.

(d) Find D_f :

(e) Find R_f :

(f) Find the **Equation(s)** of any/all asymptotes. Be sure to label which type they are.

(g) Find $\lim_{x \rightarrow \infty} f(x)$

(h) Find the $\lim_{x \rightarrow -\infty} f(x)$