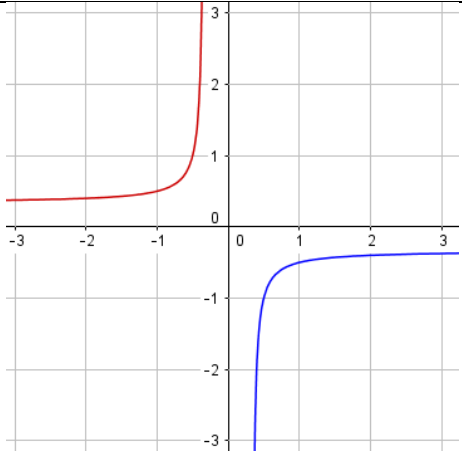
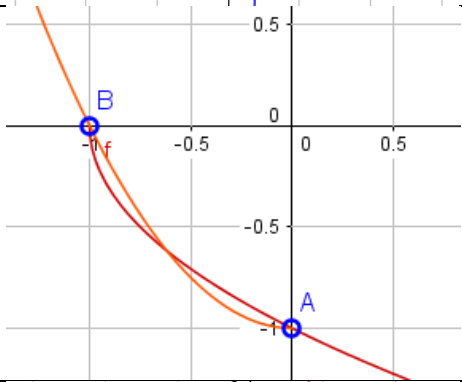
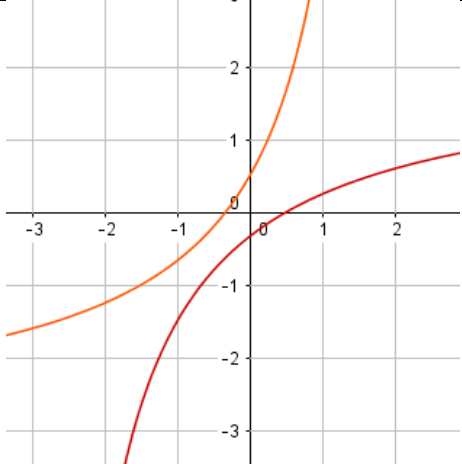
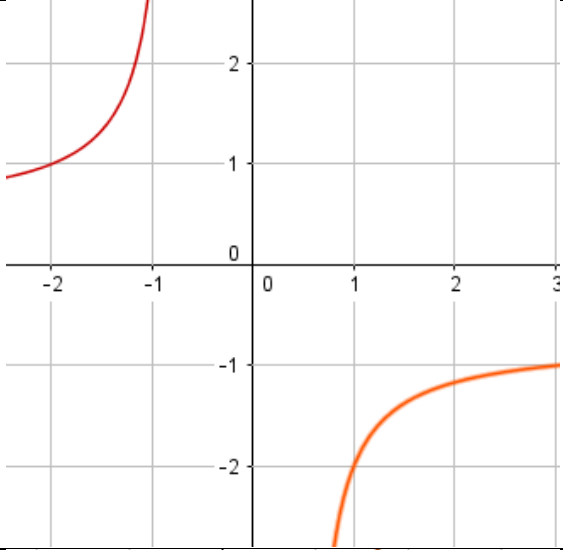
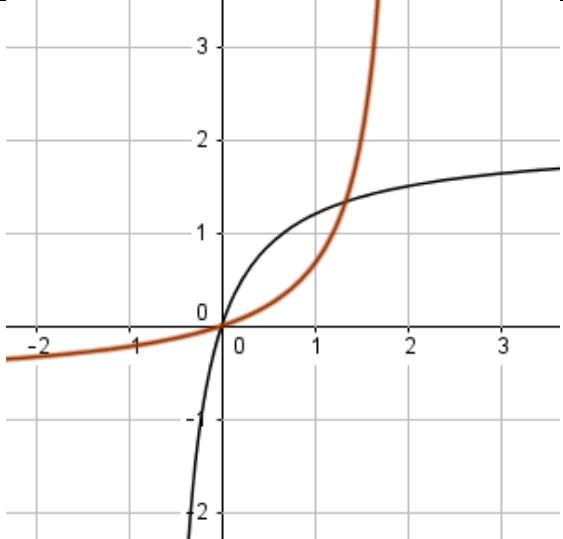
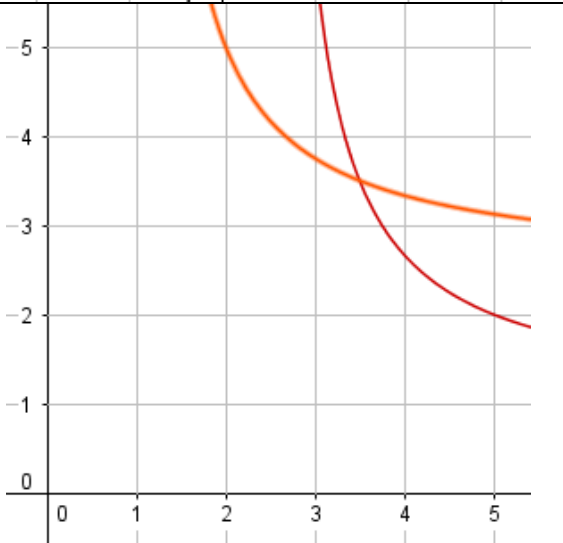


VD unit 1 topic 6 part 2

Given  $f(x)$  and its domain, (a) find  $f^{-1}(x)$ , (b) Identify the domains and ranges for both  $f(x)$  and  $f^{-1}(x)$  (c) Graph both  $f(x)$  and  $f^{-1}(x)$  on the same xy-plane (d) Find the intersections of  $f$  and  $f^{-1}$  if possible, algebraically as well as graphically.

$f(x) = \frac{x}{3x+1}, x < -\frac{1}{3}$		$f^{-1}(x) = \frac{-x}{3x-1}, x > \frac{1}{3}$ <p>No intersection</p> <p>Ranges:</p> $f(x) > \frac{1}{3}$ $f^{-1}(x) < -\frac{1}{3}$
$f(x) = -\sqrt{x+1}, x > -1$		$f^{-1}(x) = x^2 - 1, x < 0$ <p>intersections at</p> $\left( \frac{1-\sqrt{5}}{2}, \frac{1-\sqrt{5}}{2} \right)$ $f(x) < 0$ $f^{-1}(x) > -1$
$f(x) = \frac{2x-1}{x+3}, x > -3$		$f^{-1}(x) = \frac{-3x-1}{x-2}, x < 2$ <p>No intersection</p> $f(x) < 2$ $f^{-1}(x) > -3$

$f(x) = \frac{2x-1}{4x+3}, x < -\frac{3}{4}$		$f^{-1}(x) = \frac{-3x-1}{4x-2}, x > \frac{1}{2}$ <p>No intersection</p> $f(x) > \frac{1}{2}$ $f^{-1}(x) < -\frac{3}{4}$
$f(x) = \frac{6x}{3x+2}, x > -\frac{2}{3}$		$f^{-1}(x) = \frac{-2x}{3x-6}, x < 2$ <p>intersect at  <math>(0,0)</math> and <math>\left(\frac{4}{3}, \frac{4}{3}\right)</math></p> $f(x) < 2$ $f^{-1}(x) > -\frac{2}{3}$
$f(x) = \frac{2x}{2x-5}, x > \frac{5}{2}$		$f^{-1}(x) = \frac{5x}{2x-2}, x > 1$ <p>intersect at <math>\left(\frac{7}{2}, \frac{7}{2}\right)</math></p> $f(x) > 1$ $f^{-1}(x) > \frac{5}{2}$