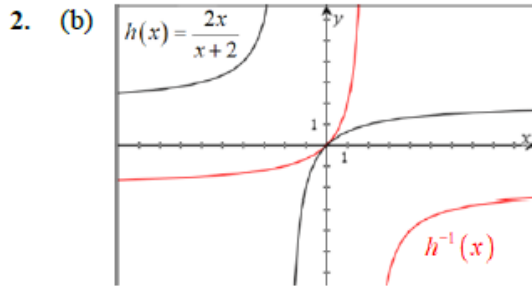## Inverse Functions

ANSWERS

1. (a) domain: $x \geq -4$; range: $y \geq 0$

   (b) $p^{-1}(x) = x^2 - 4,\ x \geq 0$

   (c) domain: $x \geq 0$; range: $y \geq -4$

2. (b)

   (c) $(0,0),\ (4,-4)$

3. (a) $y = 2^x$

   (b) $a = 8, b = 3$

4. (a) domain: $x \in \mathbb{R}, x \neq 3$; range: $y \in \mathbb{R}, y \neq 2$

   (b) $g^{-1}(x) = \dfrac{3x-12}{x-2}\quad \left[\text{or } g^{-1}(x) = 3 - \dfrac{6}{x-2}\right]$

   (c) setting $g(x) = g^{-1}(x)$ gives quadratic equation $x^2 - 5x + 12 = 0$ which has no real solutions

5. (a) domain: $x \in \mathbb{R}$; range: $y > 0$

   (b) $h^{-1}(x) = e + \ln x$

   (c) $(0.708, 0.708)$ and $(4.14, 4.14)$

6. (a) graph at right

   (b) $f^{-1}(x) = \sqrt{\dfrac{2}{3}x + 2}$

   (c) $(1.79, 1.79)$

$f(x) = \dfrac{3}{2}x^2 - 3,\ x \geq 0$