2. a) $f^{-1}(x) = x + 4$ b) $f^{-1}(x) = -\frac{1}{6}x - \frac{1}{3}$
c) $f^{-1}(x) = \frac{5}{3}x + 5$ d) $f^{-1}(x) = 2x - 6$

3. Examples: a) $\{x \mid x \geq 2, x \in \mathrm{R}\}$ or $\{x \mid x \leq 2, x \in \mathrm{R}\}$
b) $\{x \mid x \geq -4, x \in \mathrm{R}\}$ or $\{x \mid x \leq -4, x \in \mathrm{R}\}$

4. a) For $f(x) = -x^2 + 6$, $x \geq 0$, the inverse is $f^{-1}(x) = \sqrt{-(x-6)}$. For $f(x) = -x^2 + 6$, $x \leq 0$, the inverse is $f^{-1}(x) = -\sqrt{-(x-6)}$.
b) For $f(x) = \frac{1}{2}x^2 + 4$, $x \geq 0$, the inverse is $f^{-1}(x) = \sqrt{2(x-4)}$. For $f(x) = \frac{1}{2}x^2 + 4$, $x \leq 0$, the inverse is $f^{-1}(x) = -\sqrt{2(x-4)}$.

5. $y = \pm\sqrt{x+2} - 3$

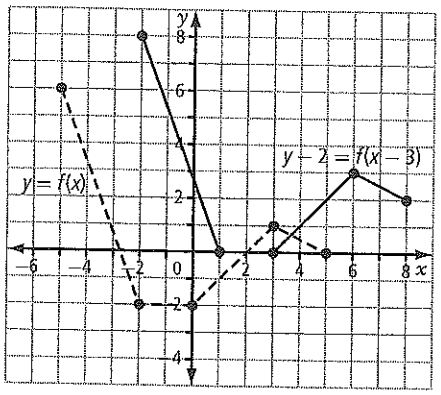
6. a) $42 < x < 105$
b) $f^{-1}(x) = \sqrt{\frac{x}{0.01634}} + 26.643$, where $x$ = CRL, in millimetres
c) 14.3 weeks

7. Answers may vary.

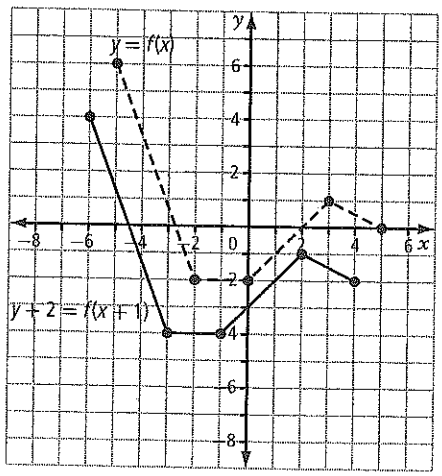
## Chapter 1 Review, pages 35–37

1. a) $y + 3 = |x - 5|$ b) $y - 1 = |x + 4|$

2. a)

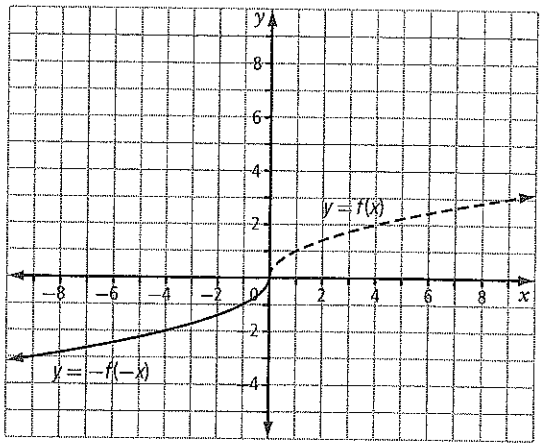



b)

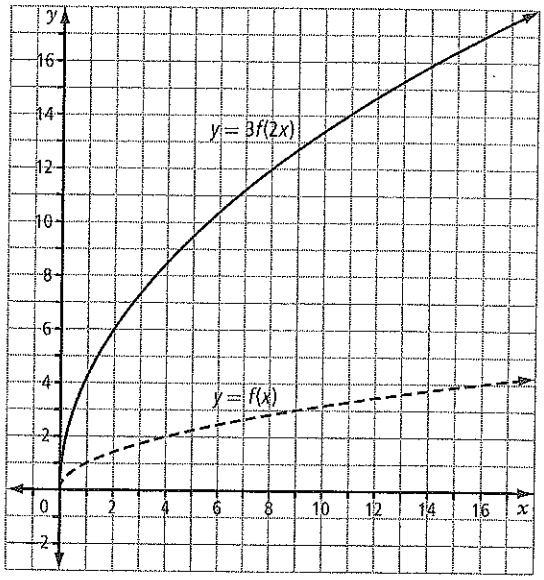



3. a) (12, 5) b) (−3, −5) c) (36, −10)

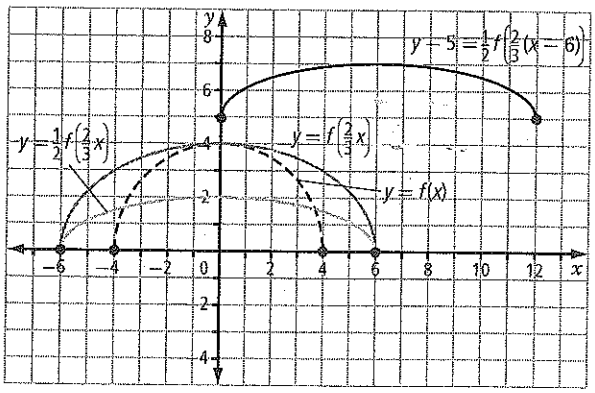
4. a) reflection in the $y$-axis and reflection in the $x$-axis



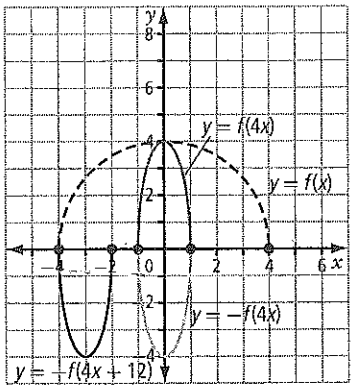

b) horizontal stretch by a factor of $\frac{1}{2}$, vertical stretch by a factor of 3




5. a)



b)




6. a) $f^{-1}(x) = -2x + 10$

   b) Example: restricted domain of $f(x)$: $\{x \mid x \geq 1, x \in \mathrm{R}\}, f^{-1}(x) = \sqrt{\frac{1}{2}}x + 1$

# Chapter 2

## 2.1 Radical Functions and Transformations, pages 39–46

1. a) vertical stretch by a factor of 3, reflection in the $y$-axis, translation 4 units left and 2 units down; domain: $\{x \mid x \leq -4, x \in \mathrm{R}\}$; range: $\{y \mid y \geq -2, y \in \mathrm{R}\}$

   b) vertical stretch by a factor of 2, reflection in the $x$-axis, horizontal stretch by a factor of $\frac{1}{4}$, translation of 3 units right and 5 units up; domain: $\{x \mid x \geq 3, x \in \mathrm{R}\}$; range: $\{y \mid y \leq 5, y \in \mathrm{R}\}$

   c) vertical stretch by a factor of 4, horizontal stretch by a factor of $\frac{1}{5}$, translation of 1 unit left and 4 units down; domain: $\{x \mid x \geq -1, x \in \mathrm{R}\}$; range: $\{y \mid y \geq -4, y \in \mathrm{R}\}$

   d) horizontal stretch by a factor of $\frac{1}{3}$, reflection in the $x$-axis and $y$-axis, translation 2 units left; domain: $\{x \mid x \leq -2, x \in \mathrm{R}\}$; range: $\{y \mid y \leq 0, y \in \mathrm{R}\}$

2. a) $y = -3\sqrt{x - 4} - 2$

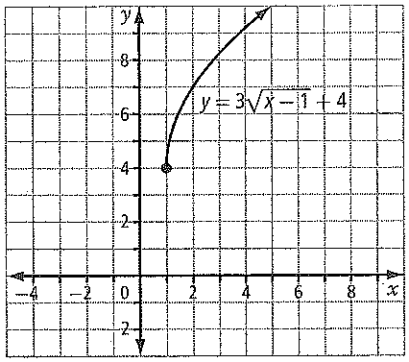
   b) $y = \sqrt{-4(x + 5)} + 3$

   c) $y = 2\sqrt{\frac{1}{3}(x + 4)} + 1$

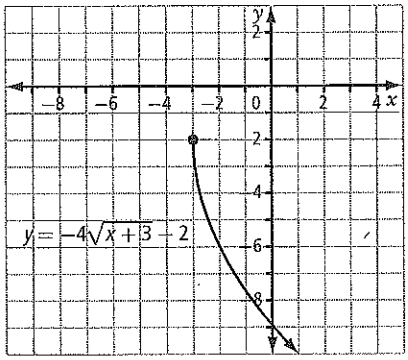
   d) $y = -3\sqrt{-2(x + 6)}$

3. a) B  b) C  c) D  d) A

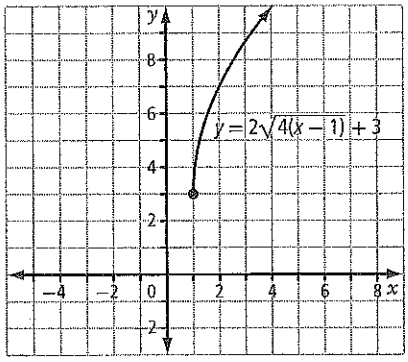
4. a)




b)




c)




d)