

Math 121 – Section 2.5 Solutions

19. $f(x) = (x - 4)^3$

20. $f(x) = (x + 4)^3$

21. $f(x) = x^3 + 4$

22. $f(x) = x^3 - 4$

23. $f(x) = (-x)^3 = -x^3$

24. $f(x) = -x^3$

25. $f(x) = 4x^3$

26. $f(x) = \left(\frac{x}{4}\right)^3 = \frac{x^3}{64}$

27. $f(x) = \sqrt{x}$

(a) shift up 2 units: $\sqrt{x} \rightarrow \sqrt{x} + 2$

(b) reflect about the x -axis: $\sqrt{x} + 2 \rightarrow -(\sqrt{x} + 2)$

(c) reflect about the y -axis: $-(\sqrt{x} + 2) \rightarrow -(\sqrt{-x} + 2)$

The final function is $g(x) = -\sqrt{-x} - 2$.

28. $f(x) = \sqrt{x}$

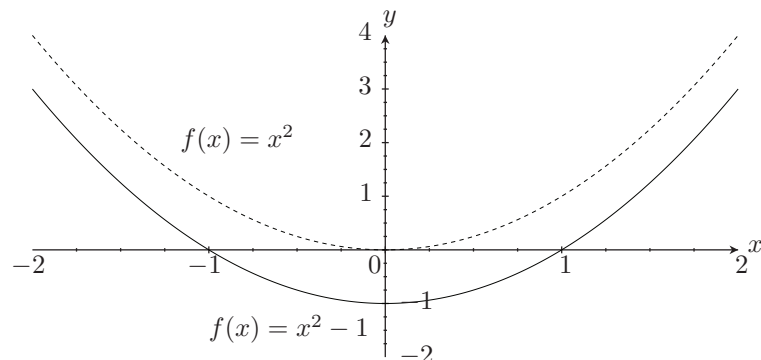
(a) reflect about the x -axis: $\sqrt{x} \rightarrow -\sqrt{x}$

(b) shift right 3 units: $-\sqrt{x} \rightarrow -\sqrt{x-3}$

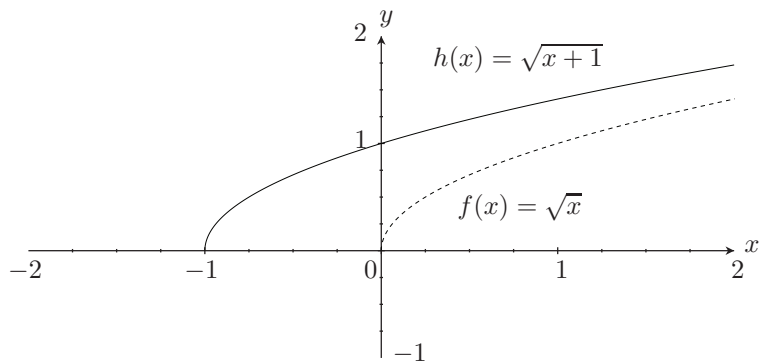
(c) shift down 2 units: $-\sqrt{x-3} \rightarrow -\sqrt{x-3} - 2$

The final function is $g(x) = -\sqrt{x-3} - 2$.

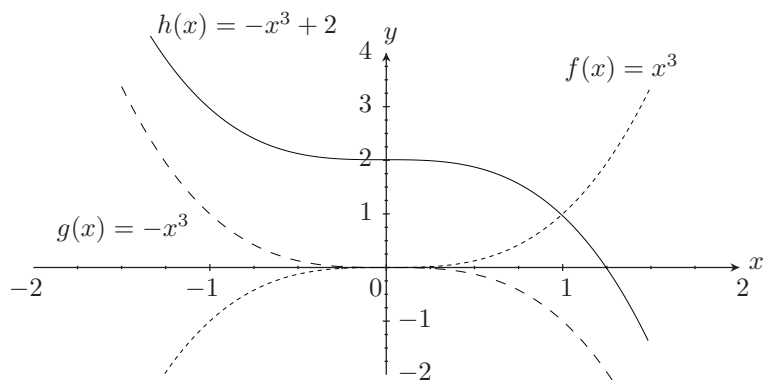
35. The function $f(x) = x^2 - 1$ is the graph of x^2 shifted down 1 unit.



40. The function $h(x) = \sqrt{x+1}$ is the graph of \sqrt{x} shifted 1 unit to the left.



51. The function $h(x) = -x^3 + 2$ is the graph of x^3 (1) reflected about the x -axis and (2) shifted up 2 units.



59. The function $k(x) = -(x+1)^3 - 1$ is the graph of x^3 (1) reflected about the x -axis, (2) shifted 1 unit to the left, and (3) shifted down 1 unit.

