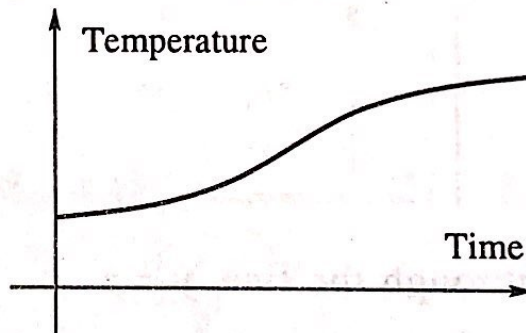
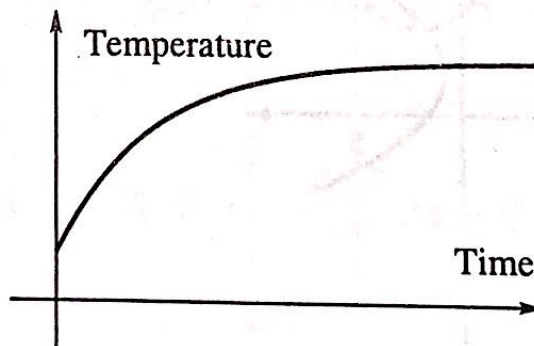


Chapter Test

- T1. Exponential
- T2. Linear
- T3. Polynomial (quadratic)
- T4. Power
- T5. All except T3. They are invertible, that is, their inverses are also functions.
- T6. Answers will vary.

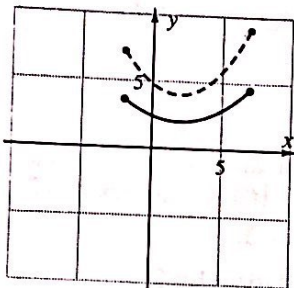


or

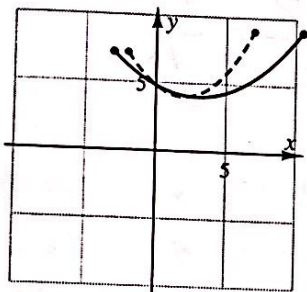


- T7. Odd
- T8. Neither
- T9. Horizontal dilation by 2; $g(x) = f\left(\frac{x}{2}\right)$

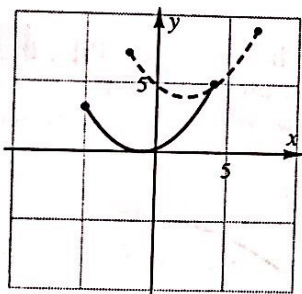
- T10. Horizontal translation by -1 , vertical translation by $+5$; $g(x) = f(x+1)+5$
- T11. Horizontal translation by $+6$, vertical dilation by 2 ; $g(x) = 2 \cdot f(x-6)$
- T12. Domain $-2 \leq x \leq 7$, range $4 \leq y \leq 9$
- T13. Vertical dilation by $\frac{1}{2}$



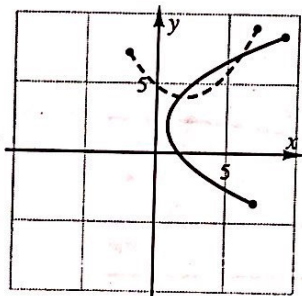
- T14. Horizontal dilation by $\frac{3}{2}$



- T15. Horizontal translation by -3 , vertical translation by -4



- T16. Reflection through the line $y = x$



- T17. The graph fails the vertical line test. (The pre-image graph fails the horizontal line test—it is not one-to-one.)

- T18. $f(g(3)) = f((3)^2 - 4) = f(5) = \sqrt{5}$;
 $g(f(3)) = g(\sqrt{3}) = (\sqrt{3})^2 - 4 = -1$;
 $f(g(1)) = f((1)^2 - 4) = f(-3)$, which is not defined, because -3 is not in the domain of f .

- T19. Horizontal translation by $+4$, vertical translation by $+5$, and vertical dilation by 3 of $\frac{x}{|x|}$; $y = 3 \cdot \frac{x-4}{|x-4|} + 5$

- T20. $L(x)$ varies proportionately to the 0.52 power of x . Power function.

- T21. $L(150) = 3.2(150)^{0.52} = 43.3288\dots$ If there are 150 wild oat plants per square meter of land, the percentage loss to the wheat crop will be about 43% .

- T22. 60% of the crop means a 40% crop loss. Solve $40 = 3.2x^{0.52}$ to get

$$x = \left(\frac{40}{3.2}\right)^{\frac{1}{0.52}} = 128.6596\dots$$

About 129 plants per square meter.

- T23. $x = 3.2y^{0.52} \Rightarrow y = \left(\frac{x}{3.2}\right)^{\frac{1}{0.52}}$

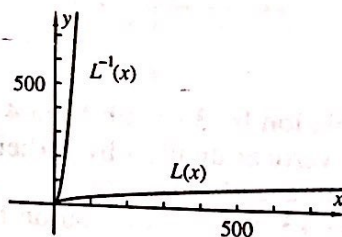
If you know the percentage loss and want to find the number of wild oat plants per square meter.

- T24. $L^{-1}(100) = \left(\frac{100}{3.2}\right)^{\frac{1}{0.52}} = 749.3963\dots$

If the crop loss is 100% (i.e., the total crop is lost), there must have been about 750 wild oat plants per square meter.

- T25. $0 \leq x \leq 750$, $0 \leq y \leq 100$

- T26.



- T27. It passes the vertical line test. (The original function passes the horizontal line test—it is one-to-one.)

- T28. Answers will vary.