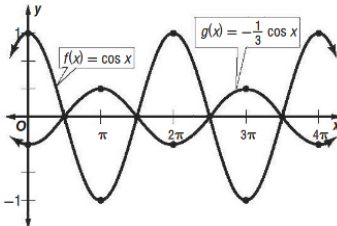
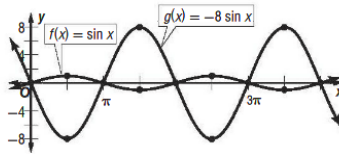


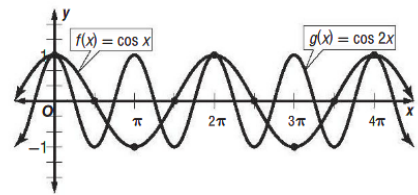
2. The graph of $g(x)$ is the graph of $f(x)$ compressed vertically and then reflected in the x -axis. The amplitude of $g(x)$ is $\frac{1}{3}$.



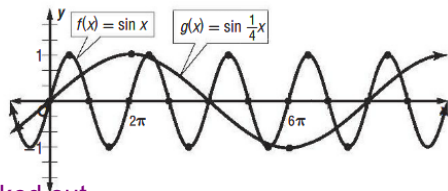
4. The graph of $g(x)$ is the graph of $f(x)$ expanded vertically and then reflected in the x -axis. The amplitude of $g(x)$ is 8.



6. The graph of $g(x)$ is the graph of $f(x)$ compressed horizontally. The period of $g(x)$ is π .

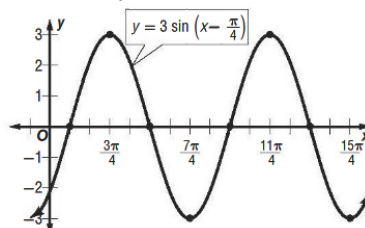


8. The graph of $g(x)$ is the graph of $f(x)$ expanded horizontally. The period of $g(x)$ is 8π .

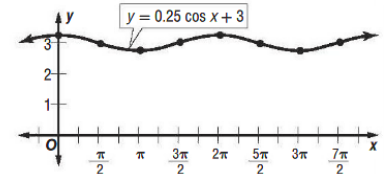


10. Sample answer: $y = 0.3 \sin 880\pi t$ 12. Sample answer: $y = 0.12 \sin 2490\pi t$

14. amplitude = 3; period = 2π ; frequency = $\frac{1}{2\pi}$; phase shift = $\frac{\pi}{4}$; vertical shift = 0

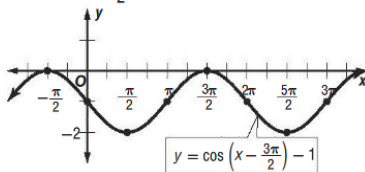


16. amplitude = $\frac{1}{4}$; period = 2π ; frequency = $\frac{1}{2\pi}$; phase shift = 0; vertical shift = 3



worked out

18. amplitude = 1; period = 2π ; frequency = $\frac{1}{2\pi}$; phase shift = $\frac{3\pi}{2}$; vertical shift = -1



20a. Sample answer: $y = 56.5 \cos\left(\frac{\pi}{3}x - \frac{\pi}{3}\right) + 143.5$

20. b. about 115 reservations

worked out

22a. amplitude = 22.5; period = 12; phase shift = 7; vertical shift = 51.5

22b. Sample answer: $y = 22.5 \cos\left(\frac{\pi}{6}t - \frac{7\pi}{6}\right) + 51.5$

22 c. about 71°F

41. True; sample answer: The graph of $y = \cos x$ is a horizontal translation of the graph of $y = \sin x$. Therefore, a cosine function can be written from any sine function using the same amplitude and period by applying the necessary phase shift.

42 False; sample answer; The period of $f(x)$ is $\frac{1}{4}$ the period of $g(x)$.

46. $\sin \theta = \frac{\sqrt{2}}{2}$, $\cos \theta = -\frac{\sqrt{2}}{2}$, 18. $\sin \theta = -\frac{9\sqrt{106}}{106}$, $\cos \theta = -\frac{5\sqrt{106}}{106}$, $\tan \theta = \frac{9}{5}$, $\csc \theta = \frac{5}{9}$, $\sec \theta = -\sqrt{2}$, $\cot \theta = -1$, $\cot \theta = \frac{5}{9}$

50. $\frac{5\pi}{36}$
52. -45°
54. a. about 13,238 years old
b. about 8.8%

56. 4 real zeros and 3 turning points; -3, -1, 1, and 3
58. 4 real zeros and 3 turning points; -1 and 1
60. yes; $f^{-1}(x) = \frac{1}{x} - 4$.

62. no
64. G
66. H