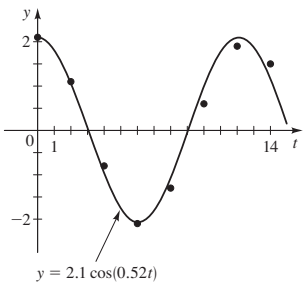
Modeling Sine Functions – (Odd Answers)

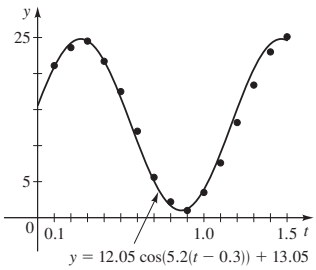
Focus on Modeling ■ page 463

1. **(a)** and **(c)**



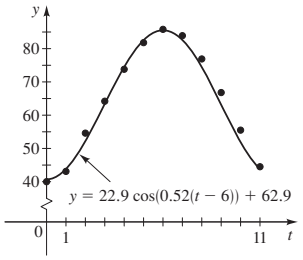
(b) $y = 2.1 \cos(0.52t)$
(d) $y = 2.05 \sin(0.50t + 1.55) - 0.01$
(e) The formula of (d) reduces to
$y = 2.05 \cos(0.50t - 0.02) - 0.01$.
Same as (b), correct to one decimal.

3. **(a)** and **(c)**



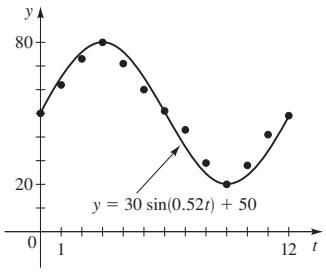
(b) $y = 12.05 \cos(5.2(t - 0.3)) + 13.05$
(d) $y = 11.72 \sin(5.05t + 0.24) + 12.96$
(e) The formula of (d) reduces to
$y = 11.72 \cos(5.05(t - 0.26)) + 12.96$.
Close, but not identical, to (b).

5. **(a)** and **(c)**



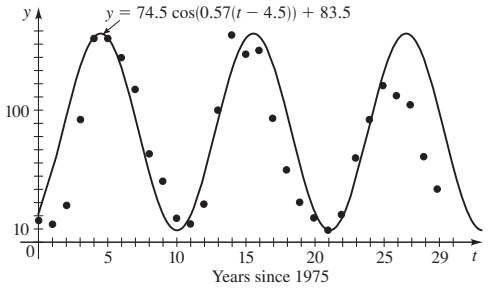
(b) $y = 22.9 \cos(0.52(t - 6)) + 62.9$,
where y is temperature (°F) and t is months (January = 0)
(d) $y = 23.4 \sin(0.48t - 1.36) + 62.2$

7. **(a)** and **(c)**



(b) $y = 30 \sin(0.52t) + 50$ where y is the owl population in year t **(d)** $y = 25.8 \sin(0.52t - 0.02) + 50.6$

9. **(a)** and **(c)**



(b) $y = 74.5 \cos(0.57(t - 4.5)) + 83.5$, where y is the averag
daily sunspot count, and t is the years since 1975
(d) $y = 67.65 \sin(0.62t - 1.65) + 74.5$