

$b(x) = -8x + 4045$, and the
 function $d(x) = 24x + 2160$,
 and $d(x)$ are in thousands.
 Population P is the number
 per year or $P = b - d$ Write a

$$P = b - d$$

$$P(x) = b(x) - d(x)$$

$$P(x) = (-8x + 4045) - (24x + 2160)$$

$$= \underline{-8x} + \underline{4045} - \underline{24x} - \underline{2160}$$

$$P(x) = -32x + 1885$$

$$P(25) = -32(25) + 1885$$

$$= 1085 \text{ thousand}$$

$$1,085,000$$

33. $g(x) = x + 1$

$h(x) = 2x^2 - 5x + 8$

$$\begin{aligned} [g \circ h](x) &= g[h(x)] = g(2x^2 - 5x + 8) = (2x^2 - 5x + 8) + 1 \\ &= 2x^2 - 5x + 9 \end{aligned}$$

$$\begin{aligned} (h \circ g)(x) &= h(g(x)) = h(x+1) = 2(x+1)^2 - 5(x+1) + 8 \\ &= 2(x+1)(x+1) - 5(x+1) + 8 \\ &= 2(x^2 + x + x + 1) - 5(x+1) + 8 \\ &= 2x^2 + 2x + 2x + 2 - 5x - 5 + 8 \\ &= 2x^2 - x + 5 \end{aligned}$$

31. $g(x) = x - 4$

$h(x) = 3x^2$

$$[g \circ h](x) = g[h(x)] = g(3x^2) = 3x^2 - 4$$

$$\begin{aligned} [h \circ g](x) &= h[g(x)] = h(x-4) = 3(x-4)^2 \\ &= 3(x-4)(x-4) \\ &= 3(x^2 - 8x + 16) \\ &= 3x^2 - 24x + 48 \end{aligned}$$

