Section 9.5

9.5.1 For each of the following pairs of numbers, find the gcd of the two numbers, and express the gcd as a linear combination of the two numbers.

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a. 56 *and* 42

Work.

$$\gcd(56, 42) = 14 = 56 - 42$$

□

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b. 81 *and* 60

Work.

81 60 21 18 3

$$\begin{aligned}
3 &= 21 - 18 \\
3 &= (81 - 60) - (60 - 2 \cdot 21) \\
3 &= (81 - 60) - (60 - 2 \cdot (81 - 60)) \\
3 &= (81 - 60) - (60 - 2 \cdot 81 + 2 \cdot 60) \\
3 &= (81 - 60) - (3 \cdot 60 - 2 \cdot 81) \\
3 &= 81 - 60 - 3 \cdot 60 + 2 \cdot 81 \\
3 &= 3 \cdot 81 - 4 \cdot 60
\end{aligned}$$

$$\begin{aligned}
21 &= 81 - 60 \\
18 &= 60 - 2 \cdot 21 \\
3 &= 21 - 18
\end{aligned}$$

□
