

**Example 6** Find the domain for which the functions  $f(x) = 2x^2 - 1$  and  $g(x) = 1 - 3x$  are equal.

**Solution**

$$\begin{aligned}\text{For} \quad & f(x) = g(x) \\ \Rightarrow & 2x^2 - 1 = 1 - 3x \\ \Rightarrow & 2x^2 + 3x - 2 = 0 \\ \Rightarrow & 2x^2 + 4x - x - 2 = 0 \\ \Rightarrow & 2x(x + 2) - 1(x + 2) = 0 \\ \Rightarrow & (2x - 1)(x + 2) = 0\end{aligned}$$

Thus domain for which the function  $f(x) = g(x)$  is  $\left\{\frac{1}{2}, -2\right\}$ .