

Solution (#1148) For a point of the hyperbola for which $x > 0$ we have

$$|PF| = e|PD| = e(x - a/e), \quad |PF'| = e|PD'| = e(x + a/e),$$

so that

$$|PF'| - |PF| = e(2a/e) = 2a.$$

And $|PF'| - |PF| = -2a$ on the other branch.