```
FloatingPoint (smallest, largest,
               gap, rational): trait
  assumes FPAssumptions
  includes
    Rational,
    TotalOrder (F)
  introduces
    mag: F → Q
    approx: F, Q, Q → Bool
    -__, abs, __^-1: F → F
    __+__, __*__, __-__, __/__: F, F → F
  asserts
    F generated by float
    ∀ f, f1, f2: F, q, t: Q
      f1 ≤ f2 == rational(f1) ≤ rational(f2);
      mag(f) == abs(rational(f));
      approx(f, q, t) ==
        abs(q) ≤ largest
          ⇒ abs(rational(f) - q)
              ≤ (smallest +
                   (gap*(mag(f) + abs(q) + t)));
      approx(-f, -rational(f), 0);
      f ≠ 0 ⇒ approx(f^-1, rational(f)^-1, 0);
      approx(abs(f), mag(f), 0);
      approx(f1 + f2, rational(f1) + rational(f2),
             mag(f1) + mag(f2));
      approx(f1 * f2, rational(f1) * rational(f2), 0);
      approx(f1 - f2, rational(f1) - rational(f2),
             mag(f1) + mag(f2));
      f2 ≠ 0
        ⇒ approx(f1/f2, rational(f1)/rational(f2), 0)
```