B. Use Cauchy's FE, \( f(x+y) = f(x) + f(y) \), or another FE on this page to obtain all continuous solutions.

1. \( g(x+y) = g(x) g(y) \), for all \( x \) and \( y \)
2. \( h(xy) = h(x) h(y) \), for all \( x > 0 \) and \( y > 0 \)
3. \( g \left( \frac{x+y}{2} \right) = \frac{g(x) + g(y)}{2} \), for all \( x \) and \( y \).
   (Hint: let \( f(x) = g(x) - g(0) \).) This is Jensen's FE.
   Interpret the FE and its solutions geometrically.
4. \( h(x+y) = h(x) + h(y) + h(x) h(y) \), for all \( x \) and \( y \)
5. \( f(xy) = x f(y) + y f(x) \), for all \( x > 0 \) and \( y > 0 \).
   (Hint: let \( g(x) = f(x)/x \).)
6. \( f(x) + g(y) = g(x+y) \), for all \( x \) and \( y \)
7. \( f(x+y) + f(x-y) = 2f(x) \), for all \( x \) and \( y \)
   (Hint: \( x = \frac{1}{2} (x+y+x-y) \).)
8. \( q(u+v) = q(u^2) + q(v^2) \), for all \( u \) and \( v \)
9. \( g(\sqrt{s^2+t^2}) = g(s) g(t) \), for all \( s \) and \( t \)

C. Find families of non-constant solutions.

1. \( f(x+y) + f(x-y) = 2f(x) f(y) \), for all \( x \) and \( y \)
2. \( q(x+y) + q(x-y) = 2q(x) + 2q(y) \), for all \( x \) and \( y \)