Solution

```
[[fn \ f \ => \ fn \ x \ => \ if \ x \ > \ 0 \ then \ f \ x \ else \ f \ (-1 \ \star \ x)]]_{FUN \ w} \ -> \ report \ w
 4pts = (FUN w -> report w) (FN -> [[fn -> if x > 0 then f x else f (-1 * x)]]
 4pts = (FUN w -> report w)
                         4pts = (FUN w -> report w)
                        (FN f k0 -> k0 (FN x k1 -> [[x > 0]]_{FUN} a -> IF a THEN [[f]]_{--} -> [[x]]_{--}
                                                                                                                                                                                                                                    ELSE [[f (-1 * x)]]<sub>k1</sub>))
                = (FUN w -> report w)
                         (FN f k0 -> k0 (FN x k1 -> [[x > 0]]<sub>FUN a -></sub> IF a THEN [[f]]<sub>FUN b -></sub> (FUN c -> b c k1) \frac{1}{x} ELSE [[f (-1 * x)]]<sub>k1</sub>))
                = (FUN w -> report w)
                          (\text{FN f k0} \rightarrow \text{k0} (\text{FN x k1} \rightarrow [[\text{x} > 0]]_{\text{FUN a}} \rightarrow \text{IF a THEN (FUN b} \rightarrow (\text{FUN c} \rightarrow \text{b c k1) x}) \text{ f ELSE } [[\text{f } (-1 * x)]]_{k1})) 
                = (FUN w -> report w)
4pt
                         (FN f k0 \rightarrow
                         k0 (FN \times k1 \rightarrow
                           [[x > 0]]_{\text{FUN a }} -> IF a THEN (FUN b -> (FUN c -> b c k1) x) f ELSE [[f]] -> [[-1 * x]] -> [[-1 * x]]
                = (FUN w -> report w)
4pt
                         (FN f k0 ->
                         k0(FN x k1 ->
                            [[x > 0]]_{FUN a \rightarrow Fun a + Fun (Fun b \rightarrow Fun c \rightarrow b c k1) x) f
                                                                                                                                                                                                                                                                   ))
                                                                                 ELSE [[f]]<sub>FUN b</sub> -> [[(-1)]] -> [[x]] -> (FUN c -> b c k1) ( * •)
 1pt
                = (FUN w -> report w)
                         (FN f k0 \rightarrow
                         k0 (FN \times k1 \rightarrow
                            [[x > 0]]_{FUN a \rightarrow F} if a Then (Fun b \rightarrow (Fun c \rightarrow b c k1) x) f
                                                                                                                                                                                                                                                                     ))
                                                                                 ELSE [[f]]_{FUN} b -> [[(-1)]]_{FUN} d -> (FUN e -> (FUN c -> b c k1) (d * e)) x
               = (FUN w -> report w)
  1pt
                         (FN f k0 \rightarrow
                         k0 (FN \times k1 ->
                            [[x > 0]]_{FUN a \rightarrow F} if a Then (FUN b \rightarrow (FUN c \rightarrow b c k1) x) f
                                                                                  ELSE [[f]]_{FUN b} \rightarrow (FUN d \rightarrow (FUN e \rightarrow (FUN c \rightarrow b c k1) (d * e)) x)
 1pt = (FUN w -> report w)
                         (FN f k0 ->
                         k0 (FN \times k1 \rightarrow
                            = (FUN w -> report w)
                         (FN f k0 \rightarrow
                         k0 (FN x k1 \rightarrow
                                                                         -> (FUN a -> IF a THEN (FUN b -> (FUN c -> b c kl) x) i
                                                                                                                                ELSE (FUN b ->
                                                                                                                                                (\text{FUN d} -> (\text{FUN e} -> (\text{FUN c} -> \text{b c k1}) (\text{d} * \text{e})) \times (-1) \text{ f}) (> ))
               = (FUN w \rightarrow report \overline{w})
                         (FN f k0 ->
                         k0 (FN \times k1 \rightarrow
                                                                                                                                                                                                                                                                                                       ))
                            [X] FUN g -> (FUN h -> (FUN a -> IF a THEN (FUN b -> (FUN c -> b c k1) x) f
                                                                                                              ELSE (FUN b ->
   1 pt
                                                                                                                               (\text{FUN d} -) (\text{FUN e} -) (\text{FUN c} -) (\text{b c k1}) (\text{g * h}) (\text{g} + \text{h}) (\text{e} -) (\text{e} -) (\text{g} + \text{h}) (\text{e} -) (
                = (FUN w -> report w)
                         (FN f k0 ->
                         k0(FN x k1 ->
                             (FUN q -> (FUN h -> (FUN a -> IF a THEN (FUN b -> (FUN c -> b c k1) x) f
                                                                                                                      ELSE (FUN b ->
                                                                                                                                     (FUN d \rightarrow (FUN e \rightarrow (FUN c \rightarrow b c k1) (d * e)) x) -1) f) (g > h)) 0) x))
```