

# l32\_binop\_2

(TMaDvFUSaitmdc97sR7T8TZ5s1tcoZHYZyQ)

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Let  $r3\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_numbers : \iota$  be given. Let  $c3\_binop\_2 : \iota$  be given. Let  $k44\_binop\_2 : \iota$  be given. Let  $v1\_xcmplx\_0 : \iota \Rightarrow o$  be given. Let  $k2\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k3\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_int\_1 : \iota \Rightarrow o$  be given. Let  $k20\_binop\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $r1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.(v1\_xcmplx\_0 X0) \Rightarrow (k2\_xcmplx\_0 X0 \ k6\_numbers = X0) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X1) \wedge \\ & ((v1\_funct\_2 X1 (k2\_zfmisc\_1 X0 X0) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0)))))) \wedge ((m1\_subset\_1 X2 X0) \wedge \\ & (m1\_subset\_1 X3 X0))) \Rightarrow (k3\_binop\_1 X0 X1 X2 X3 = k1\_binop\_1 X1 X2 X3) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_int\_1 X0) \wedge (v1\_int\_1 X1)) \Rightarrow (k20\_binop\_2 X0 X1 = k2\_xcmplx\_0 X0 X1) \quad (3)$$

Assume the following.

$$\neg v1\_xboole\_0 \ k4\_numbers \quad (4)$$

Assume the following.

$$\begin{aligned} & (v1\_funct\_1 \ k44\_binop\_2) \wedge ((v1\_funct\_2 \ k44\_binop\_2 \ (k2\_zfmisc\_1 \\ & k4\_numbers \ k4\_numbers) \ k4\_numbers) \wedge (m1\_subset\_1 \ k44\_binop\_2 \\ & (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ (k2\_zfmisc\_1 \ k4\_numbers \ k4\_numbers) \\ & k4\_numbers)))) \end{aligned} \quad (5)$$

Assume the following.

$$m1\_subset\_1 \ c3\_binop\_2 \ k4\_numbers \quad (6)$$

Assume the following.

$$c3\_binop\_2 = k6\_numbers \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (m1\_subset\_1 \ X1 \ X0) \Rightarrow (\forall X2. ((v1\_funct\_1 \\ & X2) \wedge ((v1\_funct\_2 \ X2 \ (k2\_zfmisc\_1 \ X0 \ X0) \ X0) \wedge (m1\_subset\_1 \ X2 \ (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 \ (k2\_zfmisc\_1 \ X0 \ X0) \ X0)))) \Rightarrow ((r3\_binop\_1 \ X0 \ X1 \ X2) \Leftrightarrow \\ & ((r1\_binop\_1 \ X0 \ X1 \ X2) \wedge (r2\_binop\_1 \ X0 \ X1 \ X2)))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_funct\_1 \ X0) \wedge ((v1\_funct\_2 \ X0 \ (k2\_zfmisc\_1 \ k4\_numbers \\ & k4\_numbers) \ k4\_numbers) \wedge (m1\_subset\_1 \ X0 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 \ k4\_numbers \ k4\_numbers) \ k4\_numbers)))) \Rightarrow ((X0 = k44\_binop\_2) \Leftrightarrow \\ & (\forall X1. (v1\_int\_1 \ X1) \Rightarrow (\forall X2. (v1\_int\_1 \ X2) \Rightarrow (k1\_binop\_1 \\ & X0 \ X1 \ X2 = k20\_binop\_2 \ X1 \ X2)))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1\_xboole\_0 \ X0) \Rightarrow (\forall X1. (m1\_subset\_1 \ X1 \ X0) \Rightarrow \\ & (\forall X2. ((v1\_funct\_1 \ X2) \wedge ((v1\_funct\_2 \ X2 \ (k2\_zfmisc\_1 \ X0 \\ & X0) \ X0) \wedge (m1\_subset\_1 \ X2 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ (k2\_zfmisc\_1 \\ & X0 \ X0) \ X0)))) \Rightarrow ((r2\_binop\_1 \ X0 \ X1 \ X2) \Leftrightarrow (\forall X3. (m1\_subset\_1 \\ & X3 \ X0) \Rightarrow (k3\_binop\_1 \ X0 \ X2 \ X3 \ X1 = X3)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1\_xboole\_0 \ X0) \Rightarrow (\forall X1. (m1\_subset\_1 \ X1 \ X0) \Rightarrow \\ & (\forall X2. ((v1\_funct\_1 \ X2) \wedge ((v1\_funct\_2 \ X2 \ (k2\_zfmisc\_1 \ X0 \\ & X0) \ X0) \wedge (m1\_subset\_1 \ X2 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ (k2\_zfmisc\_1 \\ & X0 \ X0) \ X0)))) \Rightarrow ((r1\_binop\_1 \ X0 \ X1 \ X2) \Leftrightarrow (\forall X3. (m1\_subset\_1 \\ & X3 \ X0) \Rightarrow (k3\_binop\_1 \ X0 \ X2 \ X1 \ X3 = X3)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0. \forall X1. ((v1\_xcmplx\_0 \ X0) \wedge (v1\_xcmplx\_0 \ X1)) \Rightarrow (k2\_xcmplx\_0 \ X0 \ X1 = k2\_xcmplx\_0 \ X1 \ X0) \quad (12)$$

Assume the following.

$$\forall X0. (v1\_xreal\_0 \ X0) \Rightarrow (v1\_xcmplx\_0 \ X0) \quad (13)$$

Assume the following.

$$\forall X0. (v1\_int\_1 \ X0) \Rightarrow (v1\_xreal\_0 \ X0) \quad (14)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_numbers) \Rightarrow (v1\_int\_1 X0) \quad (15)$$

**Theorem 1**  $r3\_binop\_1 k4\_numbers c3\_binop\_2 k44\_binop\_2$ .