

75. $5+0=5$ (A3) 76. $5+((-5x)+5x)=5$ (Transitivity of eq 74, 75)
 77. $(5+(-5x))+5x=5$ (Transitivity of eq on 72, 76)
 78. $5x=(5+(-5x))+5x$ (Symmetry of eq 71)
 79. $5x=5$ (Transitivity of eq on 78, 77)
 80. Steps 21-39 have already showed that $\frac{1}{5} > 0 \therefore \frac{1}{5} \neq 0$ (Trichotomy prop)
 81. $\frac{1}{5} \cdot (5 \cdot x) = \frac{1}{5} \cdot 5$ (Substitute eq 79)
 82. $\frac{1}{5} \cdot (5 \cdot x) = 1$ (Transitivity of eq on 81, 42)
 83. $x=1$ (Transitivity of eq on 49, 82)
 84. $\{x: x \in \mathbb{R}, x < 1\} \cup \{x: x \in \mathbb{R}, x=1\}$
 85. $\{x: x \in \mathbb{R}, x \leq 1\} \rightarrow$ Holds in all situations

b) Determine the set $B := \{x \in \mathbb{R}: x^2 - 3x > 4\}$

1. $x \in \mathbb{R}, x^2 - 3x > 4$ (Given) 2. $(x^2 - 3x) + (-4) > 4 + (-4)$ (Thm 2.1.7(b))
3. $4 + (-4) = 0$ (A4) 4. $(x^2 - 3x) + (-4) > 0$ (Substitute eq 3 in 2)
5. $x^2 - 3x = x^2 + (-3x)$ (Defn. of subtraction)
6. $(x^2 - 3x) + (-4) = (x^2 + (-3x)) + (-4)$ (Substitute eq 5)
7. $(-1) \cdot 3x = -3x$ (Ex 2.1, 1(c)) 8. $x^2 + ((-1) \cdot 3x) = x^2 + (-3x)$ (Substitute eq 7)
9. $(-1) \cdot 4 = -4$ (Ex 2.1, 1(c)) 10. $(x^2 + (-1) \cdot 3x) + (-1) \cdot 4 = (x^2 + (-3x)) + (-4)$ (Substitute eq 9)
11. $(x^2 + ((-1) \cdot 3x)) + (-4) = (x^2 + (-3x)) + (-4)$ (Substitute eq 8)
12. $(x^2 + (-1) \cdot 3x) + (-1) \cdot 4 = (x^2 + (-3x)) + (-4)$ (Transitivity of eq on 10, 11)
13. $4 = 3+1$ (Successor function)
14. $4 + (-1) = (3+1) + (-1)$ (Substitute eq 13)
15. $(3+1) + (-1) = 3 + (1+(-1))$ (A2) 16. $1 + (-1) = 0$ (A4)
17. $3 + (1+(-1)) = 3 + 0$ (Substitute eq 16) 18. $3 + 0 = 3$ (A3)
19. $3 + (1+(-1)) = 3$ (Transitivity of eq on 17, 18)
20. $(3+1) + (-1) = 3$ (Transitivity of eq on 15, 19)