

Exercise 1B #3,4

3. a) $\begin{array}{c} \text{i} \\ 16-4m=0 \\ m=4 \end{array}$ $\begin{array}{c} \text{ii} \\ 16-4m>0 \\ m<4 \end{array}$ $\begin{array}{c} \text{iii} \\ 16-4m<0 \\ m>4 \end{array}$

b) $\begin{array}{c} 9-8m=0 \\ m=\frac{9}{8} \end{array}$ $\begin{array}{c} 9-8m>0 \\ m<\frac{9}{8} \end{array}$ $\begin{array}{c} 9-8m<0 \\ m>\frac{9}{8} \end{array}$

c) $\begin{array}{c} 9-4m=0 \\ m=\frac{9}{4} \end{array}$ $\begin{array}{c} 9-4m>0 \\ m<\frac{9}{4} \end{array}$ $\begin{array}{c} 9-4m<0 \\ m>\frac{9}{4} \end{array}$

4. a) $\begin{array}{c} \text{i} \\ k^2+8k>0 \\ k(k+8)>0 \end{array}$ $\begin{array}{c} \text{ii} \\ k^2+8k\geq 0 \\ k\leq -8 \text{ or } k\geq 0 \end{array}$ $\begin{array}{c} \text{iii} \\ k^2+8k=0 \\ k=-8, 0 \end{array}$ $\begin{array}{c} \text{iv} \\ k^2+8k<0 \\ -8<k<0 \end{array}$

* $\begin{array}{c} + \quad - \quad + \\ | \quad | \quad | \\ -8 \quad 0 \end{array}$
 $k < -8 \text{ or } k > 0$

* the number line helps answer all parts

b) $\begin{array}{c} 4-4k^2>0 \\ 4(1-k^2)>0 \\ 4(1-k)(1+k)>0 \\ \begin{array}{c} - \quad + \quad - \\ | \quad | \\ -1 \quad 1 \end{array} \\ -1 < k < 1 \end{array}$ $\begin{array}{c} 4-4k^2\geq 0 \\ \downarrow \\ -1 \leq k \leq 1 \end{array}$ $\begin{array}{c} 4-4k^2=0 \\ \downarrow \\ k=-1, 1 \end{array}$ $\begin{array}{c} 4-4k^2<0 \\ \downarrow \\ k < -1 \text{ or } k > 1 \end{array}$

#4 (continued)

<u>i</u>	<u>ii</u>	<u>iii</u>	<u>iv</u>	
$(k+2)^2 - 4(1)(4) > 0$	$k^2 + 4k - 12 > 0$	$k^2 + 4k - 12 \geq 0$	$k^2 + 4k - 12 = 0$	$k^2 + 4k - 12 < 0$
$(k+6)(k-2) > 0$	$k \leq -6$ or $k \geq 2$	$k = -6, 2$	$-6 < k < 2$	
$\begin{array}{c} + \quad - \quad + \\ \quad \\ -6 \quad 2 \end{array}$				
$k < -6$ or $k > 2$				

$(k-2)^2 - 4(2)(2) > 0$	$k^2 - 4k - 12 > 0$	$k^2 - 4k - 12 \geq 0$	$k^2 - 4k - 12 = 0$	$k^2 - 4k - 12 < 0$
$(k-6)(k+2) > 0$	\downarrow	\downarrow	\downarrow	
$\begin{array}{c} + \quad - \quad + \\ \quad \\ -2 \quad 6 \end{array}$	$k \leq -2$ or $k \geq 6$	$k = -2, 6$	$-2 < k < 6$	
$k < -2$ or $k > 6$				

$(3k-1)^2 - 4(1)(2k+10) > 0$	$9k^2 - 14k - 39 > 0$	$9k^2 - 14k - 39 \geq 0$	$9k^2 - 14k - 39 = 0$	$9k^2 - 14k - 39 < 0$
$(9k+13)(k-3) > 0$	\downarrow	\downarrow	\downarrow	
$\begin{array}{c} + \quad - \quad + \\ \quad \\ -\frac{13}{9} \quad 3 \end{array}$	$k \leq -\frac{13}{9}$ or $k \geq 3$	$k = -\frac{13}{9}, 3$	$-\frac{13}{9} < k < 3$	
$k < -\frac{13}{9}$ or $k > 3$				

$k^2 - 4(k+1)(k) > 0$	$-3k^2 - 4k > 0$	$-3k^2 - 4k \geq 0$	$-3k^2 - 4k = 0$	$-3k^2 - 4k < 0$
$-k(3k+4) > 0$	$-\frac{4}{3} \leq k \leq 0$	$k = -\frac{4}{3}, 0$	$k < -\frac{4}{3}$ or $k > 0$	
$\begin{array}{c} - \quad + \quad - \\ \quad \\ -\frac{4}{3} \quad 0 \end{array}$				
$-\frac{4}{3} < k < 0$				