(Q1)

(a) We can factorize $\dfrac{x+1}{x^2-x}$ as follows:

$$\frac{x+1}{x(x-1)}$$

Considering the denominator, we can only have a negative value of the term when $x > 0, x < 1$. Considering the numerator, the entire term stays negative for all $x < -1$, as all x terms will be negative.
Thus, the final interval is:

$$(-\infty, -1) \cup (0, 1)$$

(b) We can factorise $3 < |3x + 9| < 12$:

$$3 < 3|x+3| < 12$$
$$1 < |x+3| < 4$$

From this inequality we can infer

$$1 < |x+3| + 4 \implies -4 < x+3 < -1 \text{ and } 1 < x+3 < 4$$
$$\implies -7 < x < -4 \text{ and } -2 < x < 1$$

The final interval is:

$$(-7, -4) \cup (-2, 1)$$