

MATH 162 Quiz 3 NAME:

1. Solve the inequality, $\frac{x-2}{x^2-3x-10} \geq 0$.

Solution:

$$\frac{x-2}{x^2-3x-10} \geq 0$$

$$\frac{x-2}{(x-5)(x+2)} \geq 0$$

Checking the signs of $x-2$, $x-5$ and $x+2$ over the regions $(\infty, -2)$, $(-2, 2)$, $(2, 5)$ and $(5, \infty)$, we conclude that $(-2, 2] \cup (5, \infty)$ is the solution set.

2. Solve for x , $\sqrt{7x+2} + x = 6$.

Solution:

$$\sqrt{7x+2} + x = 6$$

$$\sqrt{7x+2} = 6 - x$$

$$(\sqrt{7x+2})^2 = (6-x)^2$$

$$7x+2 = 36 - 12x + x^2$$

$$(x-2)(x-17) = 0.$$

Substituting $x = 2$ and $x = 17$ into the original equation, we find the solution to be $x = 2$.

3. Given $A(1, 5)$ and $B(2, -2)$, find (a) the distance $d(A, B)$ and (b) the midpoint of segment AB .

Solutions: $d(A, B) = \sqrt{(1-2)^2 + (5-(-2))^2} = \sqrt{50}$.

Also the midpoint is $(\frac{1+2}{2}, \frac{5+(-2)}{2}) = (\frac{3}{2}, \frac{3}{2})$.