Math 103 Precalculus (Vinroot)
September 28, 2015

Homework #2 Part A

1. Find the equation of the line through the points $(-1, 3)$ and $(2, 4)$.

2. Find the equation of the line with slope $1/2$ and which goes through the point $(5, -4)$.

3. Find the equation of the line which is parallel to the line with equation $y = 2x + 279$, and which goes through the point $(1, 1)$.

4. Find the equation of the line with y-intercept 5 and which is perpendicular to the line with equation $5x - 3y = 4$.

5. Find the equation of the line perpendicular to the line with equation $2x + y = 3$ and with x-intercept 4.

6. Multiply the following to obtain a simplified polynomial:
(a): $(x - 3)(x - 2)$ **(b):** $(x + 4)(x - 5)$ **(c):** $(x + a)(x + b)$.
(d): $(3x - 2)(4x + 1)$ **(e):** $(2x^2 - 1)(x + 1)$ **(f):** $(x - 2)(x + 3)(x + 2)$

Find the solutions to 7 through 10 by factoring.

7. $x^2 - 6x + 9 = 0$

8. $x^2 - 7x = -12$

9. $2x^2 + 5x - 3 = 0$

10. $x^4 - 3x^2 + 2 = 0$
Hint: Write $z = x^2$, and rewrite this as a quadratic in z. Solve for z by factoring, the solve for x using $z = x^2$.

Homework #2 Part B

1. Find solutions to the following by completing the square:
(a): $x^2 + 4x - 6 = 0$ **(b):** $x^2 - x - 1 = 0$

Find the solutions to 2 through 5 using the quadratic formula. Before finding solutions, check to see that it does have solutions by finding the disriminant (that is, $b^2 - 4ac$).

2. $x^2 + x - 4 = 0$

3. $x^2 + 5x + 3 = 0$

4. $x^2 + 3x + 5 = 0$

5. $2x^2 - 8x + 5 = 0$

Solve the following inequalities. Be sure you give a clear description of all values of x which satisfy the inequality.

6. $x^2 - 8x + 15 > 0$

7. $x^2 + 3x \leq -2$

8. $(2x + 1)(3x - 2) \geq 0$

9. $3x^2 + x - 2 < 0$

10. $x^2 - 8x + 16 \leq 0$