Exam 2
Thursday, 03/13/25 (changed from Wednesday)
1.6-1.7,2.1 -2.4

2.4

34. Suppose $C(x) = x^2 - 10x + 27$, $x \geq 0$ represents the costs, in *hundreds* of dollars, to produce x *thousand* pens. Find the number of pens which can be produced for no more than \$1100.

cost $\leq$ \$1100

$C(x) = x^2 - 10x + 27 \leq 11$

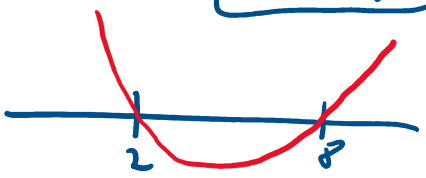
Solve this inequality

let $f(x) = x^2 - 10x + 16 \leq 0$

Solve $x^2 - 10x + 16 = 0$

$(x - 8)(x - 2) = 0$

$x = 2, 8$



coeff of $x^2 = 1 > 0$
$\therefore$ parabola opens up

$[2, 8]$

$2 \leq x \leq 8$

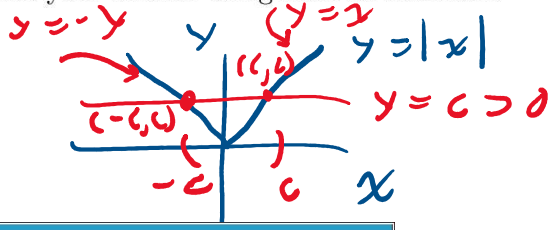
If we produce between 2000 and 8000 pens (including the end values), the cost is no more than \$1100.

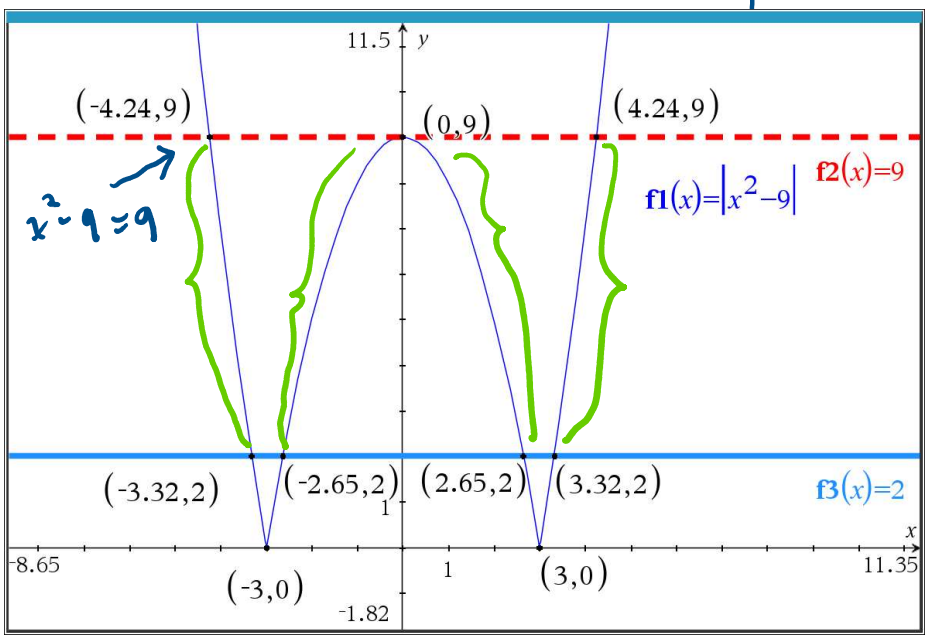
2.4: 27

2.4.1 Exercises

In Exercises 1 - 32, solve the inequality. Write your answer using interval notation.

27. $2 \leq |x^2 - 9| < 9$





From graph

$\approx (-4.24,-3.32] \cup [-2.65,0) \cup (0,2.65] \cup [3.32,4.24)$

$x^2 - 9 = 9$

$x^2 = 18$

$x = \pm\sqrt{18}$

$x = \pm\sqrt{9 \cdot 2}$

$\boxed{x = \pm 3\sqrt{2}}$

3*sqrt(2)=4.242640687119285

Finish this at on your own.

Write the point-slope equation of the line with slope =4 and passing through the point (5,8). Then, convert it to slope-intercept form.

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point-slope

$y - y_0 = m(x - x_0)$, m = slope, (x_0, y_0) = fixed point

$y - 8 = 4(x - 5)$

slope-intercept

$y = mx + b$, m = slope, b = y-intercept

$y = 8 + 4x - 20$

$y = 4x - 12$