ANSWER THIS PROBLEM USING PEN AND PAPER

PROBLEM 6 (10 POINTS).

A test has been performed on an oil well and the following pairs of oil rate and flowing bottomhole pressure are reported:

Test point	qo [Sm3/d]	pwf [bara]
1	1080	270
2	2050	180

The reservoir pressure is 360 bara and the bubble point pressure at reservoir pressure is 250 bara.

Task (10 POINTS): Propose an IPR equation to use for this well and calculate all the parameters in the equation suggested using the test data. Justify your answer.

Additional information:

Some IPRs:

Dry gas backpressure equation:

$$q_{\bar{g}} = C_R \cdot \left(p_R^2 - p_{wf}^2 \right)^n$$

Saturated oil Vogel equation

$$q_{\bar{o}} = q_{\bar{o},max} \left[1 - 0.2 \cdot \frac{p_{wf}}{p_R} - 0.8 \cdot \left(\frac{p_{wf}}{p_R}\right)^2 \right]$$

Saturated oil Fetkovich equation

$$q_{\bar{o}} = q_{\bar{o},max} \left[1 - \left(\frac{p_{wf}}{p_R} \right)^2 \right]$$

Undersaturated oil, OR high pressure gas equation

$$q=J\cdot\left(p_R-p_{wf}\right)$$