3. $p = 80 - x$ $\quad C = 200 + 40x$

MAXIMIZE PROFIT

$P = R - C$

AND $R = xp$

$P = R - C$

$P = xp - C$

$P = x(80 - x) - (200 + 40x)$

$P = 80x - x^2 - 200 - 40x$

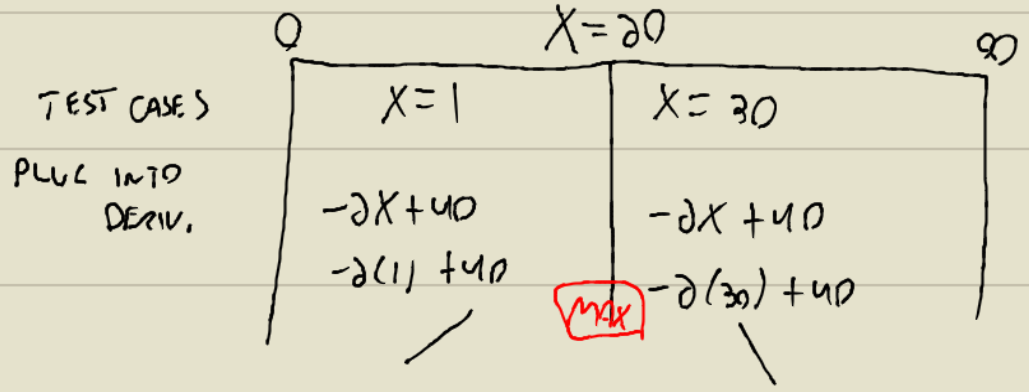
$P = -x^2 + 40x - 200$

$\frac{dP}{dx} = -2x + 40$

$-2x + 40 = 0$

$40 = 2x$

$20 = x$



MAX AT $x = 20$

$p = 80 - x$

$p = 80 - 20$

$p = \$60$