

Ch R2 Ch Renew

19. $R - C = P$

$$x(100 - .0005x) - (30x + 200,000) \geq 500,000$$

$$100x - .0005x^2 - 30x - 200,000 \geq 500,000$$

$$-.0005x^2 + 70x - 700,000 \geq 0$$

$$.0005x^2 - 70x + 700,000 = 0$$

$$x = \frac{70 \pm \sqrt{(-70)^2 - 4(.0005)(700,000)}}{2(.0005)}$$

$$x = \frac{70 \pm \sqrt{4900 - 1400}}{.001}$$

$$x = \frac{70 \pm \sqrt{3500}}{.001}$$

$$x = \frac{70 \pm 59.161}{.001}$$

$$x = \frac{129.161}{.001} \quad \text{or} \quad x = \frac{10.839}{.001}$$

$$x = 129,161 \quad x = 10,839$$

Critical Values

Test Values

$$-.0005x^2 + 70x - 700,000 \geq 0$$

Test 0
False
-700000 > 0

$$10,839 \leq x \leq 129,161$$

$$[10,839, 129,161]$$